Keeping it Close to Home: *Changes in Regional Trade Patterns*

Research Thesis

Presented in Partial Fulfillment of Requirements for graduation

"with Research Distinction in Economics" in the undergraduate colleges of
The Ohio State University

By
Paul Jackson

The Ohio State University
February 2014

Project Advisor: Professor Paulina Restrepo-Echavarria, Department of Economics

An Abstract of

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I examine the implications of protectionist trade policy imposed by a large open economy like the United States on the behavior of regional trading patterns of a small open economy like Thailand and Philippines. I find that the direction of trade for Thailand and Philippines has shifted from the United States to Asia in the last twenty years. Despite this trend, I do not find a connection between this direction of trade shift and the implementation of protectionist policy. As an alternative explanation, I use difference-in-differences estimations to show that the formation of the North Atlantic Free Trade Agreement (NAFTA) can help explain the direction of trade shift and leave this paper to future research into the implications of the formation of regional free trade agreements.

Acknowledgements

I would like to thank Paulina Restrepo-Echavarria for hearing my initial research ideas, helping me develop my thoughts into a focused paper, and believing that my research would end up at interesting results. I would also like to thank Cameron DeHart for helping me in the initial stages of constructing a research proposal, Nancy Haskell for providing feedback on my initial research proposal, Trevon Logan for encouraging me to write a senior thesis and providing support from the beginning of the project, and Anthony Bradfield for encouraging me to write a senior thesis. Many others have contributed to this project and have supported me. This paper would not have come about without the support of all of you. For that, thank you so much.

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1. Introduction

1.1 Motivation

Analysis of an open economy model predicts that protectionist trade, any policy such as a tariff or quota enacted to protect a domestic economy and industry again foreign competition, policies do not affect the trade balance of a particular country. Instead, protectionist trade policies increase the real exchange rate and reduce both imports and exports, as explain in Gregory Mankiw's textbook *Macroeconomics.* In modeling the small open economy, Mankiw states "protectionist trade policies do not affect the trade balance" (Mankiw 2010). Should this conclusion be applied to all economies that are classified as "small open economies"? More interestingly, does this hold true when protectionist policies are enacted against a small open economy? A protectionist trade policy enacted against a small open economy that is export driven (meaning having a positive trade balance) would seem to have the effect of reducing net exports.

There are only a few economies in the world that can be classified as a large open economy. Due to the abundance of data and their connection with many economies in the world, I chose to use the United States as the large open economy. For the small open economies, I chose Thailand and Philippines. Thailand is among the developing countries in the most open quartile of outward oriented economies, while Philippines is in the second quartile (Santos-Paulino 2005). By selecting two small economies that are open to trade, this paper will provide insight into how small and large economies interact in the world economy. Examining two countries from the same region will allow the analysis to control for unobservable factors that may affect a country's trade balance between different

regions. Also, Thailand and Philippines are chosen because both countries are involved in a regional free trade agreement within Southeast Asia, which is important in this papers' analysis. This is further discussed in section 3. To help motivate the analysis of Thailand and Philippines, it is necessary to show their changes in trade patterns in the last twenty years as both countries have become more open to trade.

1.2 Outline

In section 2, I give a brief overview of how Thailand and Philippines' trade have changed with the evolution of their economies and attitudes toward trade in the world economy. In section 3, I introduce two major regional trade agreements that play an important role in explaining the changes in Thailand and Philippines' trade patterns and help guide policy advice in the conclusion. In section 4, I show in detail the changes in Thailand and Philippines' export patterns over the last 30 years. Section 5 offers more information from country trade reports, provided by the World Trade Organization on Thailand, Philippines, United States, and China, which help me arrive at my explanations for the changes in trade within Southeast Asia. Section 6 contains my proposed explanations for the changes in regional trading patterns. In section 7, I empirically test one of the proposed explanations for the changes in trade within Southeast Asia. Section 8 offers concluding remarks, policy implications, and potential for future research on this topic.

2. Trends in Trade

2.1 Policy Evolution

Since the 1950's, the economies of both Thailand and Philippines have experienced significant changes. In this section, I focus on an overview of their change in trade policy and also relate those changes with trade statistics.

Following World War II (WWII), Thailand's growth and government policy were directed toward domestic production and industrialization. This policy falls into a category called Import Substitution Industrialization (ISI). Thailand followed this model of growth until the early 1970s when it changed its policy and the direction of its economy to become more involved in the world economy. Thailand's policy began to remove barriers to trade and to promote domestic manufactured exports (Siriprachai 1995). This policy falls into what some call Export Oriented Industrialization (EOI). After the switch to EOI, Thailand became progressively more open to trade as evidenced by government plans for growth and development, the government thought that Thailand's road to growth was through producing and exporting manufactured goods. Thailand's vision and follow through on becoming more open to trade is why it finds itself in the upper most quartile of openness to international trade.

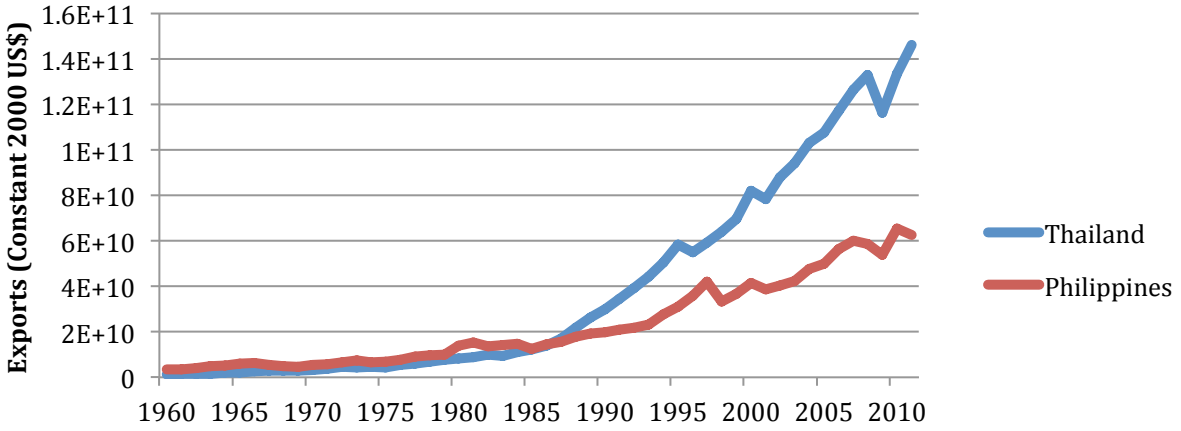
Philippines has followed a different path than Thailand in its evolution of trade policy. Like Thailand, Philippines followed the ISI model of growth following WWII. Starting earlier than Thailand in the 1960s, Philippines tried to liberalize and move towards EOI, but the policy was not effective. In the 1960s and 1970s, Philippines created many programs and policy acts that had the intent to open the economy to trade, but it

wasn't until the early 1980s that tariffs started to be reduced (Mangabat 1998). It was at that point when Philippines' economy started to announce its presence in the global economy.

2.2 Growth in Trade

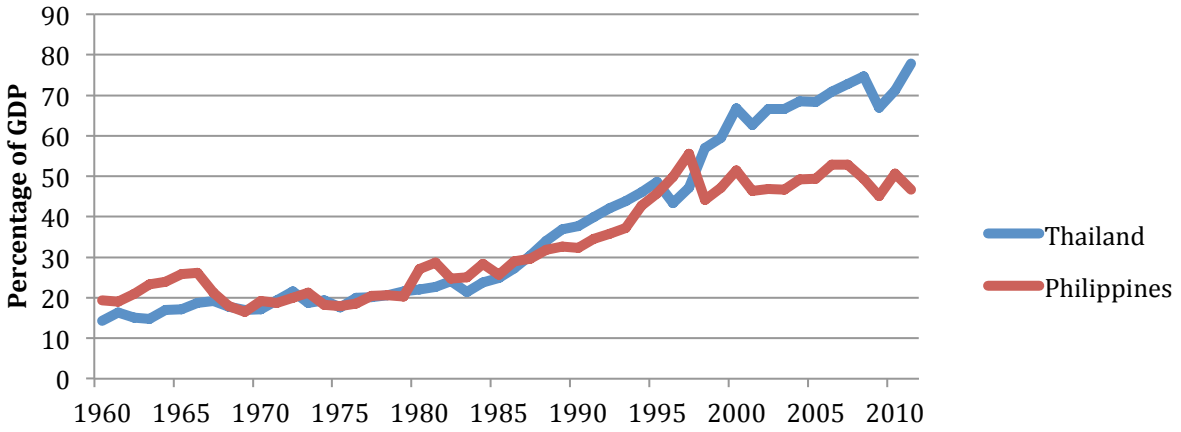
The changes in Thailand and Philippines economies can be visualized by their growth in imports and exports. Note that trade growth can be correlated to the time period in which changes in their economy and trade policy.

Figure 2.1: Growth in Exports



Source: The World Bank

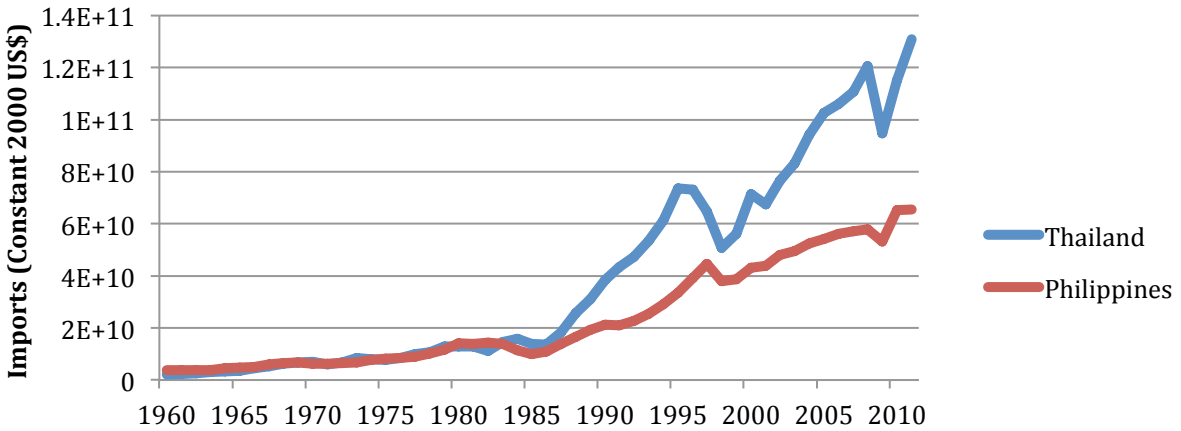
Figure 2.2: Exports as a Percentage of GDP



Source: The World Bank

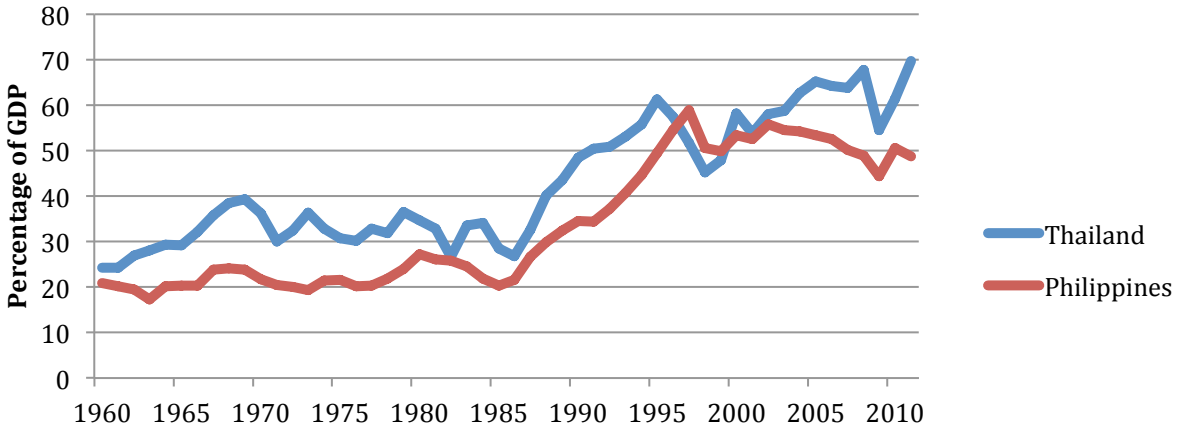
We can see from Figures 2.1 and 2.2 both imports and exports as a percentage of GDP have increased at large rates. It seems to be a result of not only the changes in Thailand and Philippines' trade policies but also the policies implemented by other countries in Southeast Asia. This will be discussed in section 3.

Figure 2.3: Growth in Imports



Source: The World Bank

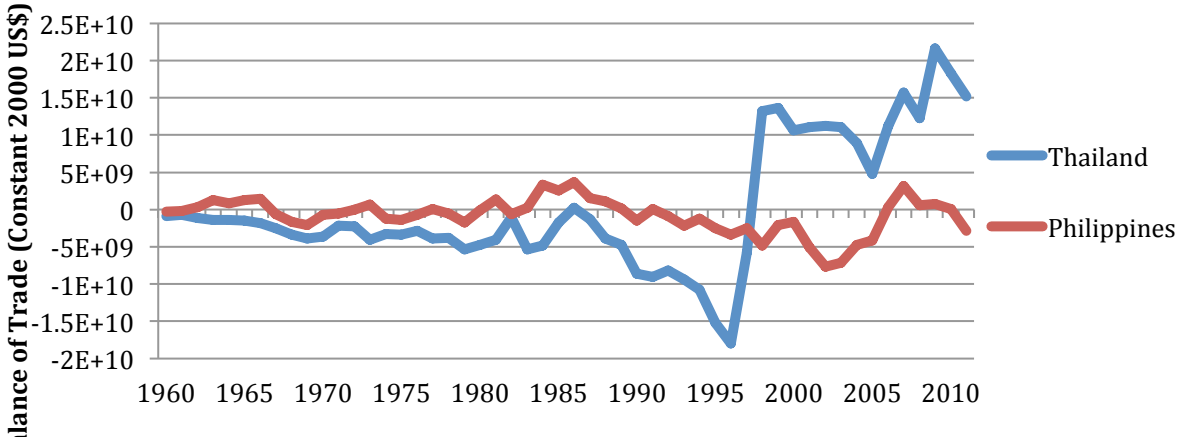
Figure 2.4: Imports as a Percentage of GDP



Source: The World Bank

The countries share similar patterns in the growth in both imports and imports as a percentage of GDP. The changes in imports may be representative of each respective country being more open to trade since the 1980s and especially in the 1990s.

Figure 2.5: Balance of Trade



Source: The World Bank

Figures 2.1 and 2.5 show a distinction between Thailand and Philippines. That is that the exports of Thailand grew more quickly relative to imports of the Philippines, resulting in the balance of trade trends. There are many factors that could cause these changes, but the difference in how Thailand and Philippines approached opening up to the world economy seems to be correlated to the difference in their trade patterns. Thailand became much more open to the world economy faster than Philippines, and it seems to be reflected in these trends. Nonetheless, both countries became much more open to trade, and that fact makes it that much more imperative to examine their change in trade patterns in greater detail and to see if they are affected by protectionist trade policy.

3. Regional Trade Agreements

3.1 Association of Southeast Asian Nations

A development in trade policy that plays a pivotal role in this research and requires attention is the formation of the Association of Southeast Asia Nations (ASEAN). ASEAN was formed in 1967 but emerged as a trade liberalizing organization in 1992 with the formation of the ASEAN Free Trade Agreement (AFTA). This agreement set the stage for the reduction on tariffs on many items traded from member states over the next ten to fifteen years (WTO 1995). The formation and implementation of AFTA are important to remember in the context of changes in Thailand and Philippine's trade patterns.

3.2 North Atlantic Free Trade Agreement

The formation of the North Atlantic Free Trade Agreement (NAFTA) in 1994 is a multilateral free trade agreement between Canada, Mexico, and the United States. Its formation is not directly related to Thailand and Philippines, but it had a significant impact on trade between Canada, Mexico, and the United States. NAFTA set forward provisions that would eliminate tariffs between the United States, Canada, and Mexico. The reductions were to happen over the next five, ten, or fifteen years depending on the product (WTO 1996). NAFTA has not only helped increase the flow of goods within North America; it may have had an impact on the trading partners of countries outside of the agreement, including Thailand and Philippines.

4. Trends in Regional Trade

4.1 Method of Constructing the Trends

In this section, I try to visualize two trends: who are the main trading partners of Thailand and Philippines and how have they changed over time? To do this, I used yearbooks from the Direction of Trade Statistics (DOTS) database published by the International Monetary Fund (IMF) for the years 1980, 1985, 1990, 1999, 2005, and 2008. DOTS contains data on the value of exports from each country to individual countries and the value of imports from the other respective countries.

To highlight who the main trading partners are for each year and country, I calculated the percentage of Thailand and Philippines' total exports and imports for each respective country. This seemed like an appropriate way to go about this because each year of data provides the total aggregate value of trade, so to standardize the data across time; it was to put it all in percentage terms.

The percentages are calculated as with the following equation:

$$\frac{Value\ of Imports\ or\ Exports\ to\ respective\ country}{DOTS\ World\ Total\ of\ Imports\ or\ Exports} * 100$$

After calculating the percentages for each respective country/region, I created a graph of the percentages of the largest trading partners for the countries, namely the United States, Japan, Mainland China, Hong Kong, Singapore, European Union (EU), Other, and ASEAN.

The ASEAN partner represents the Association of Southeastern Asian Nations. This is composed of Thailand, Philippines, Brunei, Indonesia, Malaysia, Cambodia, Lao PDR, Myanmar (Burma), and Vietnam. Note: ASEAN actually includes Singapore as well; but for this analysis, I excluded Singapore from the ASEAN calculation because Singapore is such a large partner of Thailand and Philippines. The ASEAN totals seen in the graphs are simply the sum of percentages for each respective country listed above.

The "other" category is simply all other countries/regions except The United States, Japan, Mainland China, Hong Kong, Singapore, European Union (EU), Other, and ASEAN. It is calculated with the following equation:

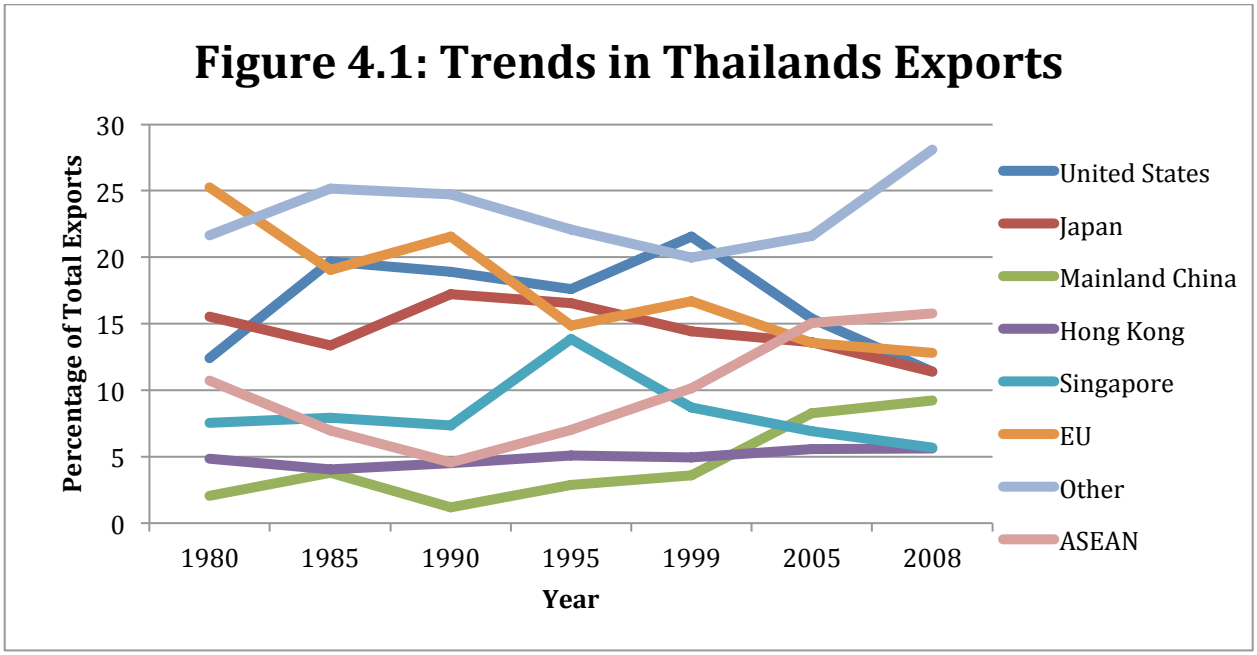
$$100 - \sum \text{US, Japan, MainlandChina, HongKong, Singapore, EU, ASEAN}$$

To acquire a more detailed description of the trade within ASEAN, I composed similar graphs that illustrate in greater detail how Thailand and Philippines trade is directed within countries in ASEAN. The interpretations of the ASEAN graphs can be found at the end of this section; but for greater detail, all of these graphs can be found in Appendices C-F.

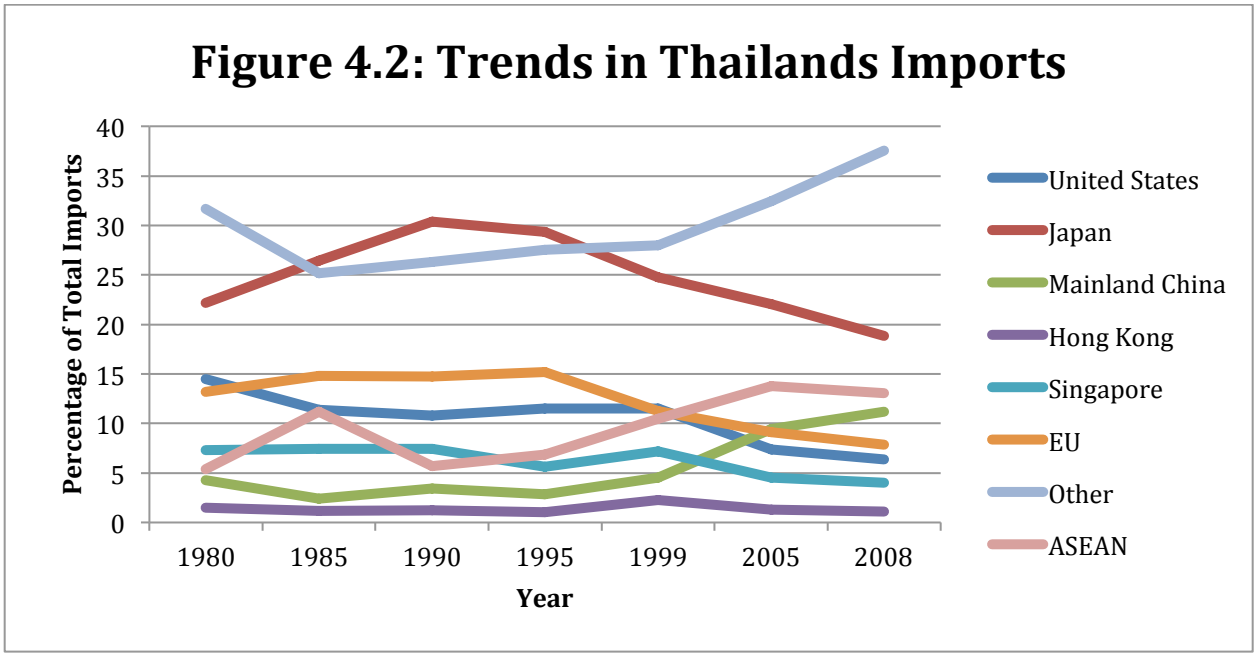
The individual graphs were compiled together to form summary graphs, which could describe how the major trading partners have changed over time. For this I made time series graphs for each major trading partner, in respect to Exports and Imports for both Thailand and Philippines.

4.2 Analyzing the Time Trends

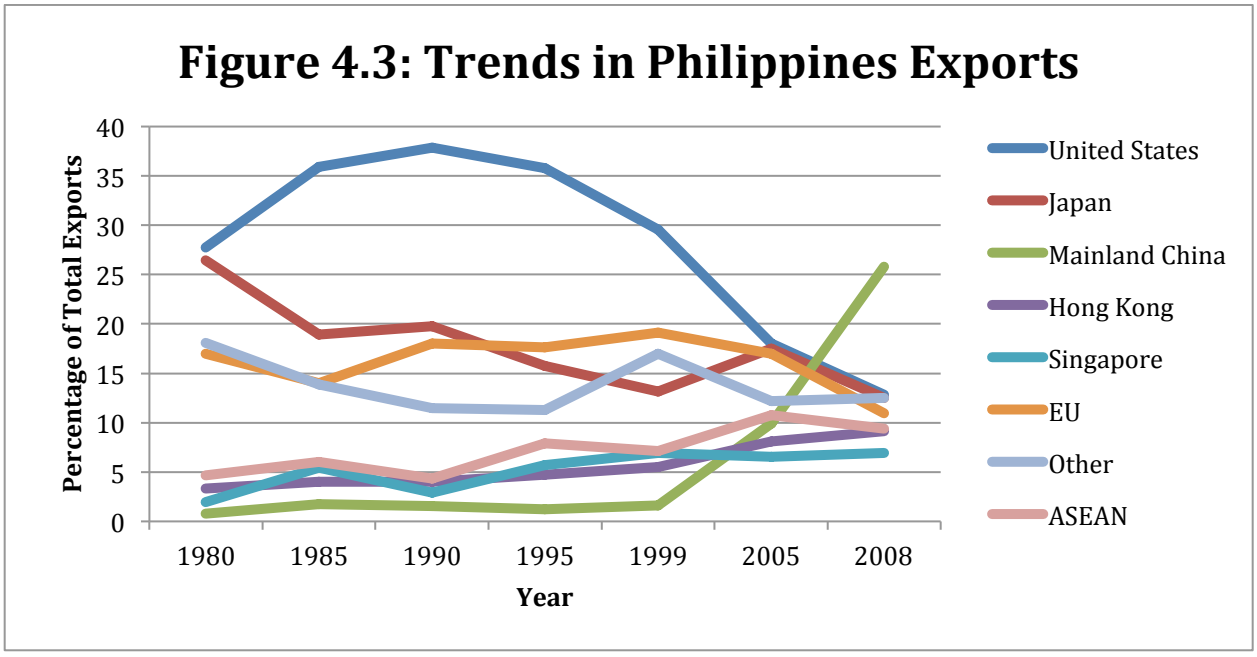
I'll use this section to analyze the change of trading partners over time for each respective country. Here are the figures describing the trends in Thailand:



There are many trends that can be followed in Figure 4.1, but what stands out to me is Other, ASEAN, and Mainland China. These are the only three sections that are increasing in percentage from 1999 to 2008.

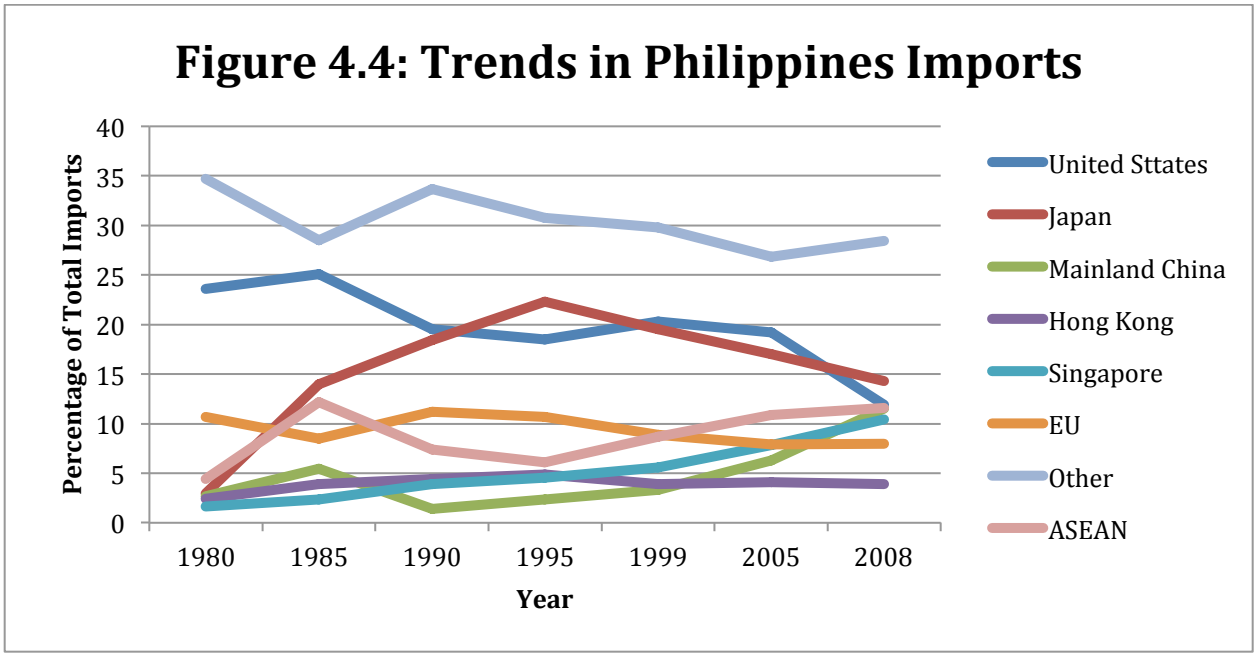


The trends in Thailand's imports are very consistent since 1980, except Thailand seems to be importing more goods from the rest of the world and less from Japan since 1995.



What is evident from Figure 4.3 is the decline in Philippines exports to the United States and the rapid increase of exports to China. An interesting note about this is that the

increase in exports to China didn't increase until a few years after the declining trend of exports to the United States started.



Philippines imports trends seem to be converging on the range of 5-15 percent. What this tells me is that Philippines imports and percentages between all countries are becoming more uniform and that Philippines does not have one major partner in particular that it imports goods from.

4.3 Using the Time Trends

The goal of the research project is to better understand what sort of implications protectionist trade policy has on manufacturing based export economies. Therefore, I limit my conclusions and next steps on *the exports* for Thailand and Philippines, as I believe their exports are more responsive to protectionist policy. What I see in the data for Thailand is that since 1995, exports to one of its largest trading partners, Japan, has decreased. This is also true for the United States since 1999. At the same time, exports to ASEAN and

Mainland China have increased. As can be seen in Appendix D, Thailand's exports within ASEAN are mostly with Malaysia and Indonesia.

Philippines' change in export pattern is staggering. Since 1999, their percentage of exports to Mainland China has increased dramatically while the exports to the United States has declined at a similar pace.

The next step is to look deeper to explore possible explanations for these changes. Can we explain Thailand's change in exports from United States and Japan to ASEAN and Mainland China by changes in protectionist policy from the United States? And can we find a similar explanation for why Philippines' exports have shifted from the United States to Mainland China? Or is this trend due to the growth of economies such as Mainland China, Malaysia, and Indonesia in the past 15 years? It is also worthwhile to explore why exports to ASEAN have increased more for Thailand than Philippines and why exports to Mainland China have increased more for Philippines than it did for Thailand.

5. Looking Within Trends in Regional Trade

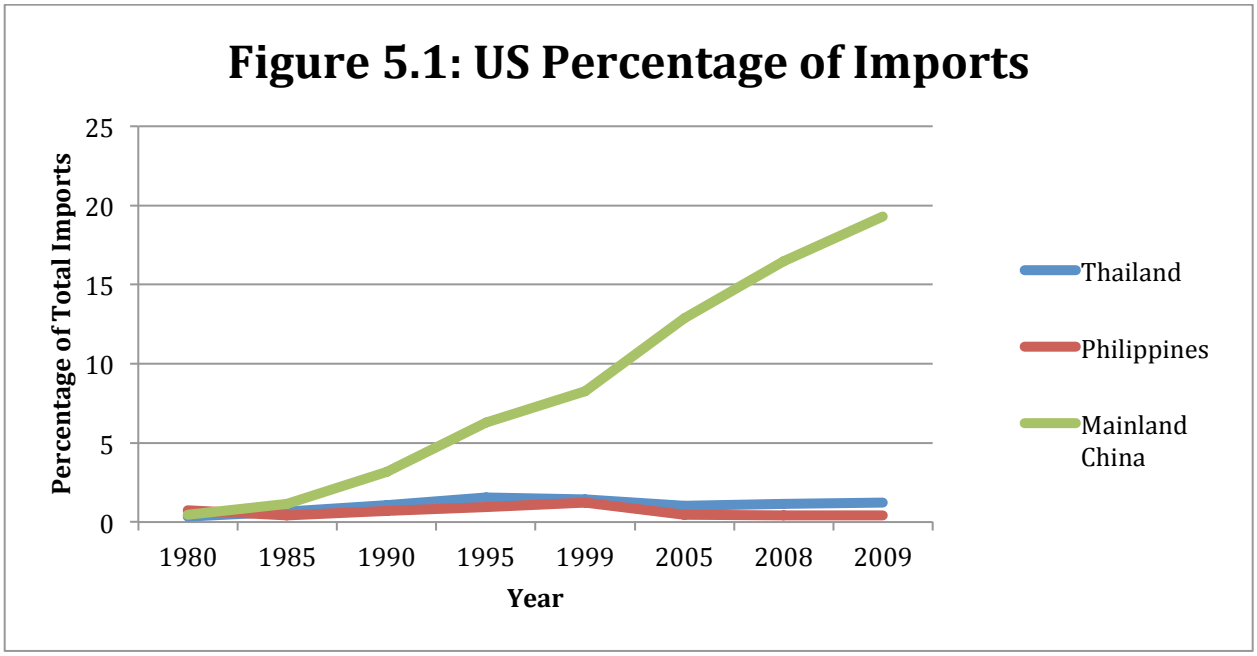
5.1 A Starting Point

The trends of Thailand and Philippines' export patterns over the last twenty years exhibit a clear decline in Thailand and Philippines exports to the United States, as a percentage of total exports. The other main pattern in the data was that Thailand's exports to Malaysia, Indonesia, and the other categories were increasing. For Philippines, their direction of exports to China was increasing. The next step after seeing these patterns was to analyze the share of US imports for China, Thailand, and Philippines.

After constructing this trend in the United States' imports, the trend would point to what should be examined in the United States' trade policies and policies by Thailand and Philippines. After seeing the pattern in US imports, further steps were taken in section 5.3-5.5 to help explain the change in Thailand and Philippines trade pattern.

5.2 Trends in United States Imports

Here are the changes in US imports from China, Philippines, and Thailand as the percentage of total imports.



What is immediately apparent is just how much the United States' trade with China has increased in the last 30 years. The other trend, or lack of trend, to notice is that the United States' imports from Thailand and Philippines has stayed relatively constant for the last 30 years. This can be tied to the growth of Thailand and Philippines exports from Figure 2.1 and 2.2. Both of the countries experienced growth in absolute exports, but clearly their exports to Asia were growing at much faster rate than to the United States.

There is no obvious negative correlation[1] between change in imports to the United States from China and the imports from Thailand and Philippines, so it is not obvious that there is a protectionist policy against Thailand and Philippines from the United States that did not affect China. Instead, Figure 5.1 suggests is that there are preferential trade agreements from the United States to China, but those agreements are not given to Thailand and Philippines. In fact, there were preferential trade agreements given to China

[1] Correlation coefficients were calculated. Their values are listed in Appendix B.4, Table 5.

from the United States after China jointed the WTO. These agreements explain nearly one third of China's export growth to the United States from 2000 to 2005 (Handley and Limão 2013). For more detail about the evolution of United States trade policy 1990, I turned to the World Trade Organization's country trade reports to look in greater detail to the trade policy of the United States for the last twenty years.

5.3 United States Trade Policy Developments

The major developments in the United States trade policies from 1990 to 1996 were the formation of two major multilateral free trade agreements. The first was the formation of the World Trade Organization (WTO) in 1995, of which the United States was a founding member. The second was the formation of the North American Free Trade Agreement (NAFTA), which was implemented on January 1, 1994.

There are two major points learned from the 1996 trade report. The first is that Canada and Mexico were receiving preferential tariff rates as a result of NAFTA. For example, at the time of the 1996 trade report, 88.5% of the imports from Mexico were under tariff preferences by the United States (WTO 1996). In data showing the change in US imports, the imports from Thailand and Philippines both decreased after 1999. Despite this trend, there is no evidence that there were protectionist policies imposed by the United States against Thailand and Philippines prior to 1996. Instead, this trend may be tied to the Asian financial crisis of the late 1990's, which severely impacted the trade of all countries involved in the crisis.

In the summary given on the trade developments for the United States in the 1999 report, it was stated that for imports of merchandise goods, the relative importance of Asia

as a source of imports declined while the importance of Mexico increased. Also, between 1996 and 1999, the countries in NAFTA agreed to reduce tariffs even further (WTO 1999). As a result of reading this report and having a better idea about the United State's trade policies in the 1990s, I found that the United States was actually reducing tariffs and protectionist measures, not increasing their barriers to trade. Also, their preferential agreements were given to Canada and Mexico beyond what was stated in the 1996 report, suggesting that the United States was focusing its reduction in barriers to trade on countries within NAFTA, while those outside of NAFTA were not receiving the same reductions in tariffs and barriers to trade.

5.4 From United States to Thailand and Philippines

The explanation for the changes in Thailand and Philippines trade patterns is somewhere other than just policies by the United States. Thailand and Philippines' export direction and the United States' composition of imports trends together imply an interesting trend. It follows that Thailand and Philippines' volume of exports was increasing enough that the total value of trade to the United States could increase percentage of exports to the United States could decrease. At the same time the percentage of imports from Thailand and Philippines (from the United States' perspective) stayed constant. This means Thailand and Philippines' trade were rapidly increasing, but their trade was growing faster to the countries within ASEAN and to China. For Thailand, their exports to Malaysia and Indonesia were growing very rapidly so we should look for any agreements between these countries that would explain the change in export pattern. For

Philippines, their trade was being directed to China more than any other country, so we should see if there were any policies put in place between China and Philippines that would help Philippines' exports turn to China more than other countries.

5.5 China, Philippines, and Thailand Trade Reports

What I noticed from Thailand's 1999 trade report is that the leaders of ASEAN met and determined that they would like to further expand intra-regional trade and trade liberalization. They announced that they would accelerate the elimination of tariffs within the ASEAN Free Trade Agreement (AFTA). The leaders agreed to reduce tariff rates to 5% or less on 90% of goods traded by ASEAN by 2000 (WTO 1999). While this wasn't an explicit agreement between Malaysia, Indonesia, and Thailand, all three countries are within ASEAN and would have tariffs reduced on trade between them.

In the 2007 report, I found evidence of increased regional trade activity between 1999 and 2007. The first was that the founding members of ASEAN (Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand) followed up on their agreement made in 1999 to reduce tariffs on all goods traded within those six countries. By 2003, all tariffs traded between those countries were reduced to between 0% and 5% (WTO 2007). Also, there was a free trade agreement made between ASEAN and China, which aimed to eliminate most tariffs between ASEAN countries and China by 2010.

In Philippines' 1999 trade report I found that since the early 1980s, Philippines' economy was becoming much more manufacturing based and that the geographic direction of Philippines trade turned more towards ASEAN, reflecting the growth of the region and

the increased regional integration with the formation of AFTA. This may help explain why Philippines and Thailand's trade was being directed more towards Asia.

It became apparent by reading Philippines' 2005 report that they don't participate in as many bilateral FTAs as Thailand does. This may help to explain why the direction of Thailand's exports was much more differentiated than Philippines. To try to find a explanation of why Philippines exports were shifting towards China, I thought to look at changes in China's economy over the time period when Philippines' exports started to shift towards China.

China's 2006 trade report shows how their composition of imports and exports changed between 1998 and 2004, around the same time when Philippines started to export much more to China. The main changes in China's import pattern were that between 1998 and 2004 their imports of electrical machines, office machines, and telecommunication equipment increased while the percentage of electronic machines, office machines, and telecommunication equipment as a total of exports increased (WTO 2006). This helps to explain why Philippine's exports shifted more towards China, rather than other countries. This explanation is discussed in section 6.

6. Explanations

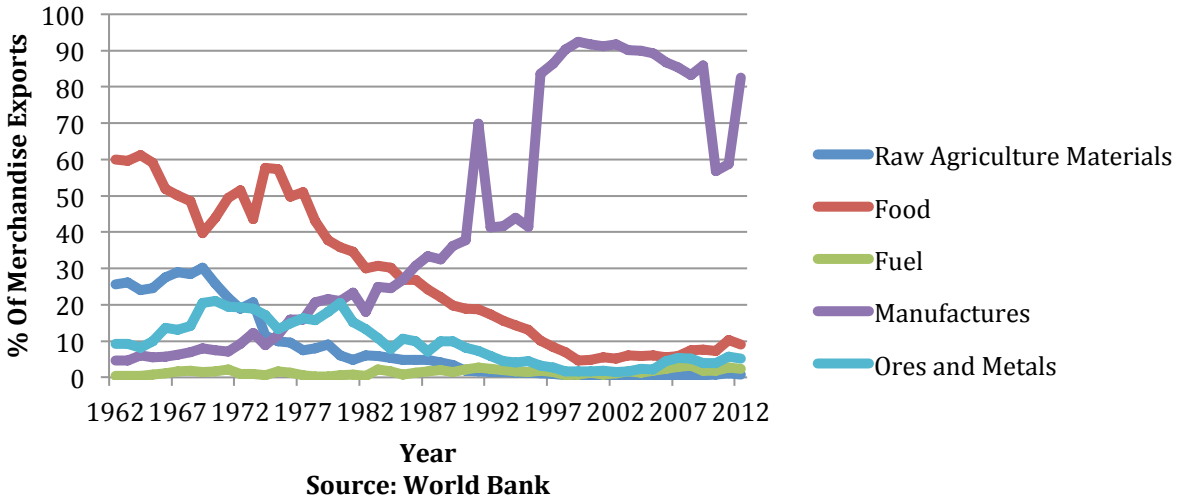
6.1 Regional Free Trade Agreements

The question to address is what caused the changes in export patterns, shown in Figures 4.1 and 4.3, for Thailand and Philippines? The first explanations are regional free trade agreements, namely NAFTA and AFTA. Both of these are regional trade agreements implemented in the 1990s and had time to be fully implemented within their respective regions. These reductions in tariffs between member countries seem to have had a significant impact on trade patterns. Thailand and Philippines could trade more freely between trading partners in Asia, while the United States started to import more manufactured goods from Mexico. The preferential tariffs given to Mexico by the United States may have caused the United States to import goods from Mexico that may have otherwise been imported from Thailand or Philippines, so essentially Mexico was "taking" trade away from Thailand and Philippines. This is not totally obvious, and the effect of preferential tariffs given to Mexico will be isolated in section seven's empirical model.

6.2 Composition of Trade and China's Growth

In this section, I describe how the composition of trade can help explain why Philippines increased its exports to China.

Figure 6.1: Philippines Merchandise Exports



Source: World Bank

We can see from Figure 6.1 that they have become increasingly dependent on manufactured exports. Thailand is also dependent on manufactured exports, but Philippines is more specialized in their trade. This is shown by the fact that 67% of Philippines total exports were semi conductors and electronic parts between 1993 and 1999 (WTO 1999). Therefore the change in Philippines export pattern to China is a result of the developments in China's economy in that they needed the "parts" from Philippines exports in order to help fuel their very own change in export pattern. China imported the primary products from Philippines that they needed as inputs in the production of final goods that were then exported to the world market.

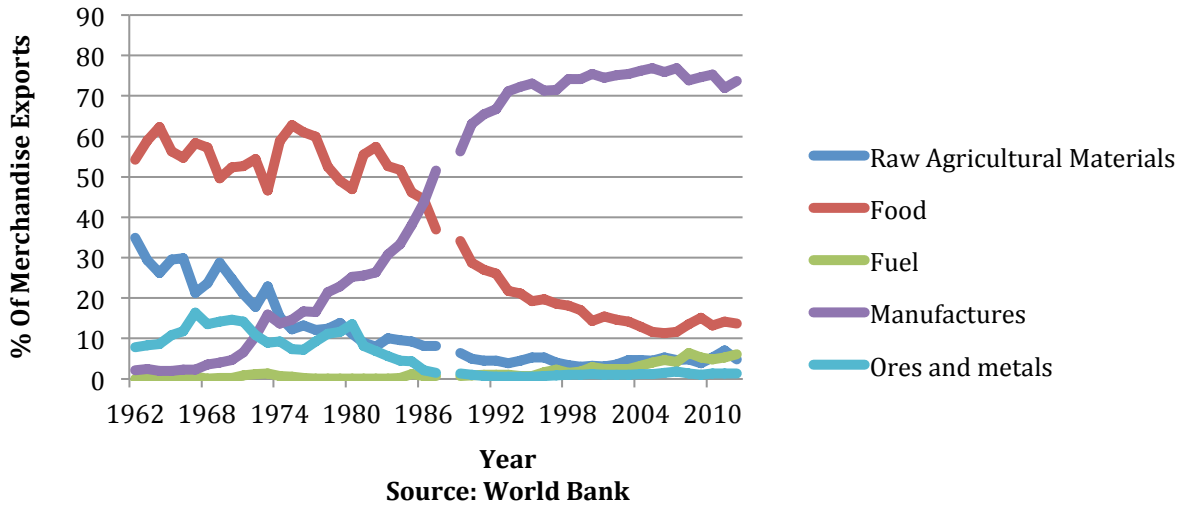
6.3 Bilateral Free Trade Agreements and Composition of Trade

Thailand's trade activity outside of ASEAN and composition of trade indicates why their trade became more directed to the "other" category, Indonesia, and Malaysia.

Thailand entered into many other trade agreements beyond ASEAN. One of them is the Indonesia-Malaysia-Thailand growth triangle. This may help to explain why Thailand's direction of exports shifted towards Indonesia and Malaysia within ASEAN. What may help explain Thailand's growth in exports to the "other" category is its multitude of bilateral free trade agreements with countries outside of ASEAN, such as Japan, India, New Zealand, South Korea, and Australia.

The composition of Thailand's trade helps to explain their growth in trade to many countries. They rely heavily on manufactured goods, as shown by the changes in the composition of their merchandise exports.

Figure 6.2: Thailand's Merchandise Exports



Source: World Bank

*Data for 1987 was not available via the World Bank.

Within Thailand's manufactured exports, their main exports (and respective percentage of total exports) in 1999 were office machines and telecommunications equipment (24.9%), other electrical machines (6.8%), textiles (8.4%), and other consumer goods (9.7%) (WTO 2003). Thailand was able to diversify its direction of trade relatively

more than Philippines because Thailand has a relatively more diverse range of exports than Philippines and greater number of FTAs with other countries.

7. Empirical Implications

7.1 Motivation

Empirical implications are also explored in part to follow the scientific method. Section 6 offers hypotheses and predictions to explain the change in regional trade patterns. Section 7 is derived from curiosity as to whether there is evidence for one of those hypotheses and to be able to reach conclusions that are supported by empirical evidence.

As addressed in section 6.1, regional free trade agreements are a potential explanation for the change in regional trade patterns. In particular, I use this section to test whether NAFTA had a significant impact on changing the regional trade patterns. I limit my analysis to NAFTA and not AFTA because the effect of NAFTA carries potential implications for protectionist policy. This will be discussed in the conclusion.

7.2 Estimation

To test whether NAFTA had a significant effect on change in regional trading patterns, I estimate several difference-in-differences equations, modeling the change in several trade variables over time. In this model, the treatment group is the group of countries that were not a part of NAFTA (i.e., any country that is not Canada, Mexico, or the United States). The control group in the estimation are countries that were a part of NAFTA and export goods to the United States, i.e. Canada and Mexico.

Formally, the model is:

$$Y_{i,t} = \beta_0 + \beta_1 postNAFTA_{i,t} + \beta_2 outNAFTA_{i,t} + \beta_3 postNAFTA_{i,t} * outNAFTA_{i,t}$$
$$+\delta \boldsymbol{X} + \varepsilon_{i,t}$$

Where *postNAFTA* is a dummy variable for whether year *t* is during the implementation of NAFTA (years 1980-1993=0, years 1994-2007=1), *outNAFTA* is a dummy variable for whether country *i* was a part of NAFTA (countries not Canada, Mexico, United States=0, Canada, Mexico, United States=1). In a difference of differences equation, we are interested in the interaction between our treatment group and the period of time in which the treatment was implemented, thus our coefficient of interest will be β_3. Other factors still need to be controlled for. The vector $\boldsymbol{X}$ represents all other factors controlled for. The factors controlled for include official exchange rate, and M2 money supply. Exchange rate and money supply vary over time and affect a countries trade so they are commonly controlled for in trade models, see (Kakar, Khan, Waliullah 2010). The error term in the model is $\varepsilon_{i,t}$.

For every model used, I test it using two different treatment groups. The first treatment group, treatment one, is Philippines and Thailand. This follows from the motivations of this paper. The second treatment group is Ecuador and Venezuela. The second treatment group, treatment two, is used to compare the models when treatment one and treatment two are used. Intuition tells us that if NAFTA made it easier for the United States to import from Mexico, then the United States would substitute goods produced in other countries for goods produced in Mexico. Treatment group two is chosen because Ecuador, Mexico, and Venezuela's export markets share more in common than Mexico, Philippines, and Thailand (World Statistics Pocketbook 2013). By comparing the

results between treatment group one and two, we will be able to make conclusions about whether the United States not only substituted imports from other countries outside of Mexico with imports from Mexico, but whether the effect was more significant for countries that had similar economies with Mexico and were a shorter geographic distance from Mexico.

7.3 Data

Here I describe the variables used in the estimation and the data used to construct them. The variable name is in parentheses following the variable description. The variables used in the models are percentage of total exports to the United States (*expUSA)*, transportation costs constructed as the natural logarithm of the ratio of Direction of Trade Statistics, DOTS, value of exports to the United States to the DOTS value of imports from the perspective of the United State (*lnTrans)*. The way that *lnTrans* is constructed allows for it to account for transportation costs and tariffs, thus total costs of exports. Both *expUSA* and *lnTrans* were constructed using the Direction of Trade Statistics database. Money supply in these models is defined as M2 money supply, and is acquired from the World Development Indicators published by the World Bank *(lnMS).* Exchange rate in these models is official exchange rate, defined as local currency unit per US$ (*ER).* It is also acquired from the World Development Indicators database published by the World Bank. Years used in the data are from 1980-2007.

Summary statistics of all variables for Philippines and Thailand can be found in Appendix B.1, table 1. Summary statistics for Ecuador and Venezuela are found in Appendix B.2, table 2.

7.4 Results

The regression tables are listed in Appendix B.2 tables 3 and 4. Table 3 represents models estimated with treatment group 1, Philippines and Thailand. Table 4 contains models estimated with treatment group 2, Ecuador and Venezuela.

My initial results interpretations will be treatment group 1. The coefficient of interest in the models is β_3, the coefficient of the interaction between *PostNAFTA* and *outNAFTA.* In all models except model (3), where *lnTrans* is the dependent variable, the coefficient of interest is significant at the 1% level. This suggests that NAFTA does explain the decrease in percentage of total exports from both Philippines and Thailand to the United States.

These results can be extended to Ecuador and Venezuela. In table 4, the coefficient of interest is significant at the 1% level in all models. This is very similar to the results for treatment 1, except the coefficient of interest is significant in model (3) for treatment 2 and not for treatment 1. Model (3) is a model where *lnTrans,* transportation costs, is the dependent variable. The significant coefficient for treatment 2 and not for treatment 1 can be interpreted as that being geographically closer to Mexico than treatment 1 was an input in determining whether the United States was able to substitute imports from treatment 2 to Mexico.

That is, transportation costs from Philippines and Thailand were significantly larger than the transportation costs from Mexico to the United States. But transportation costs from Ecuador and Venezuela to the United States would be closer in value to the costs from Mexico. This means that when imports from Mexico became cheaper with the

implementation of NAFTA, that new difference in costs between Ecuador, Mexico, and Venezuela was significant enough that the United States diverted its imports away from Ecuador and Venezuela to Mexico.

8. Concluding Remarks

8.1 Protectionist Trade Policy

In a world where tariffs and protectionist trade policies still exist and are relevant to the world economy, their effect is difficult to isolate due to the prevalence of trade liberalization. In my research, Philippines, Thailand, and the United States have moved to liberalize their trade through reductions in tariffs and joining multilateral free trade agreements. For these reasons, I cannot conclude that protectionist trade policies imposed by a large open economy on a small open economy have the effect of reducing net exports.

8.2 Policy Implications

While I cannot conclude that protectionist policy has an effect on net exports, it is very possible that we should reconsider our definition of protectionist policy. A definition better fit for protectionist policy in today's global economy may be seen as a country, or group of countries, excluding others from a regional and/or multilateral free trade agreement. We can see that the formation of NAFTA changed the trading patterns between the United States and Mexico and is one explanation for why Philippines and Thailand shifted exports from the United States to Asia.

In the world economy, countries will only become more interconnected and that involves the formation of regional and multilateral free trade agreements. The frequency of their formation is increasing, as noted in a recent economist article, "The action in the

trade-liberalism world these days is not inside the WTO but within regional agreements" (The Economist 2013). This trend is also noted in a recent paper by Ian Sheldon, " . . . the increase in offshore production of inputs may have pushed countries to seek 'deep integration' through preferential trade agreements (PTAs) as opposed to 'shallow integration' though the WTO" (Sheldon 2014). This suggests that countries are becoming more interconnected through trade agreements outside of the WTO. I believe that this paper provides a framework for what kinds of effects regional trade agreements and their preferential agreements may have on countries inside the agreement and sometimes more importantly, countries outside the agreement. The recent re-formation of the Trans-Pacific Partnership and potential formation of the Transatlantic Trade and Investment Partnership makes research in this area of international trade relevant to today's global economy. This paper and future research could potentially preview the implications of those partnerships should they be implemented.

8.3 Future Research

My analysis was limited to the scope of only a few economies. I would expect similar results for other economies, but the results presented in this paper may not be generalizable to different types of regional free trade agreements and different types of economies forming agreements. If the effects of regional and multilateral free trade agreements are to be better understood, they need to be researched in a broader context within the world economy. Future research should focus on producing definitive generalizable results that can be applied to different forms of regional trade agreements that may differ in size and by the types of economies that are within the agreement.

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Appendix A. The Informal Economy

A.1 Defining the informal economy

The informal economy is something that doesn't have a definitive definition. For this reason, there are many interpretations of what it actually means. By reading a few different definitions of the informal economy, I get the sense that it is all unregulated or unregistered economic activity within a country. The economic activity in the informal economy falls outside of the scope of government oversight.

A.2 Measuring the informal economy

In many countries in the world the informal economy makes up a large percentage of the country's economic activity. It's for this reason that it's especially important that the informal economy is accounted for when economic indicators are published. Through what I can tell about Thailand and Philippines, their respective governments do account for economic activity in the informal economy when they published large macro data variables, such as gross national product (GNP). It seems that there are various techniques to measure the informal economy, which seem to have their unique strengths and weaknesses, but for our purposes we can be assured that the data we are working with takes the informal economy into account the as best as possible.

The measurements found on informal economies start in the mid 1990s. It is worrisome to think about how the informal economy affected the country's economy and macro data variables prior to this, but it will be very difficult to find out. The International Labor Organization (ILO) did not define the informal economy until 1993. To me this says

that the informal economy was talked about much prior to 1993 and definitely not measured that much prior to the 1990s.

A.3 The informal economy in Thailand

Thailand's informal economy is very large. In fact, in the late 1990s Thailand had the largest informal economy in Asia (ILO office 2004). One explanation for this is the 1997 financial crisis that affected much of Asia. When an economy hits a downturn a lot of those who lose jobs in the formal sector seek employment in the informal sector. The financial crisis wasn't unique to Thailand, as it affected many other countries in Asia. We can conclude that with or without the financial crisis, Thailand has one of the largest informal economies in Asia.

Employment in the informal economy is composed of occupations such as housemaids, vendors, motorcycle and taxi drivers, and small manufacturing from home. I didn't find estimates as to what percentage each category makes up in total informal economy employment. I did find that in 2002, the ratio of those employed in the informal economy to the entire labor force in the country was approximately 7:10 (United Nations 2004).

A.4 The informal economy in Philippines

In the same years that Thailand's informal economy was ranked as the largest in Asia, Philippines' had the third largest informal economy (ILO office 2004). While their sizes may be similar, the composition of the informal economy in Philippines is different from Thailand. Employment in the informal economy is concentrated in the agricultural

sector in Philippines. Also, since 1980, the employed in informal economy to total labor force ratio has been slowly decreasing (Sibal 2007).

The informal economy in Philippines was defined before the ILO's definition in 1993. In Philippines, the Social Reform and Poverty Alleviation Act defined the "informal sector" in Philippines in 1988. I'm not sure if this affects data or the economy that much, but it does show that Philippines has long been aware of the informal economy and recognizes that it is an important component of its economy as a whole.

Appendix B: Empirical Appendix

B.1 Data sources and definitions

expUSA. Percentage of a country's exports that are directed to the United States. Calculated by taking the ratio of value of exports to the United States to total value of exports. Source: Direction of Trade Statistics published by the International Monetary Fund.

PostNAFTA. Binary variable to represent the years after NAFTA was implemented. Calculated as follows: PostNAFTA=0 for years 1980-1993, PostNAFTA=1 for years 1994-2007.

outNAFTA. Binary variable to represent the countries outside of the NAFTA agreement. For treatment 1 outNAFTA is calculated in the following way. outNAFTA=0 for Canada and Mexico, outNAFTA=1 for Philippines and Thailand. For treatment 2 outNAFTA calculation is outNAFTA=0 for Canada and Mexico, outNAFTA=1 for Ecuador and Venezuela.

Trans. Proxy variable to measure value of transportation costs. Calculated as the ratio of the value of exports from a particular country to the United States to the Value of imports by the United States from that country. Source: Direction of Trade Statistics published by the International Monetary Fund.

lnTrans. Natural logarithm of the defined variable Trans. Source: Direction of Trade Statistics published by the International Monetary Fund.

lnMs. Natural logarithm of M2 money supply. Source: World Development Indicators published by the World Bank.

ER. Official exchange rate defined as Local Currency Unit per US$. Source: World Development Indicators published by the World Bank.

B.2 Descriptive Statistics

Table 1: Descriptive Statistics for Philippines and Thailand Treatment

Country	Stats	expUSA	Trans	lnTrans	lnMS	ER
Canada	mean	78.1	0.983	-0.0166	27.2	1.29
	sd	7.57	0.0243	0.0245	0.7503	0.137
	min	60.6	0.952	-0.0487	25.9	1.067
	max	87.6	1.049	0.0485	28.4	1.56
Mexico	mean	76.1	1.15	0.118	26.1	5.44
	sd	11.9	0.2801	0.226	2.46	4.36
	min	52.4	0.9095	-0.0948	21.06	0.0229
	max	88.7	1.74	0.559	28.8	11.2
Philippines	mean	30.9	1.22	0.201	27.2	31.04
	sd	7.63	0.0803	0.0638	1.36	15.4
	min	16.7	1.107	0.102	24.7	7.51
	max	39.9	1.44	0.366	29.15	56.03
Thailand	mean	18.1	1.47	0.131	28.4	30.5
	sd	5.02	2.04	0.613	1.12	7.62
	min	11.9	0.124	-2.086	26.3	20.4
	max	33.3	12.03	2.488	29.9	44.4
Total	mean	50.8	1.21	0.108	27.2	17.07
	sd	28.07	1.032	0.334	1.75	16.3
	min	11.9	0.124	-2.086	21.06	0.0229
	max	88.7	12.03	2.488	29.9	56.03

Notes: Sample includes 28 observations for each country. Data is used for 1980-2007. The stat "sd" refers to standard deviation. "Min" and "Max" are minimum and maximum, respectively.

Table 2: Descriptive Statistics for Ecuador and Venezuela Treatment

Country	Stats	expUSA	Trans	lnTrans	lnMS	ER
Canada	mean	78.1	0.983	-0.0166	27.2	1.29
	sd	7.57	0.0243	0.0245	0.7503	0.137
	min	60.6	0.952	-0.0487	25.9	1.067
	max	87.6	1.049	0.0485	28.4	1.56
Mexico	mean	76.1	1.15	0.118	26.1	5.44
	sd	11.9	0.28	0.226	2.46	4.36
	min	52.4	0.909	-0.0948	21.06	0.0229
	max	88.7	1.74	0.559	28.8	11.2
Ecuador	mean	45.3	1.47	0.189	22.04	7807.97
	sd	11.05	1.85	0.452	0.576	10638.6
	min	3.87	0.713	-0.333	21.06	25
	max	64.2	10.8	2.387	23.2	25000
Venezuela	mean	50.2	1.078	0.0447	21.5	0.542
	sd	6.99	0.233	0.272	2.36	0.744
	min	31.09	0.496	-0.7001	18.3	0.0043
	max	66.9	1.505	0.408	25.7	2.14
Total	mean	62.4	1.17	0.086	24.2	1901.02
	sd	17.6	0.948	0.299	3.01	6170
	min	3.87	0.496	-0.7001	18.3	0.0043
	max	88.7	10.8	2.38	28.7	25000

Notes: Sample includes 28 observations for each country. Data is used for 1980-2007. The stat "sd" refers to standard deviation. "Min" and "Max" are minimum and maximum, respectively.

B.3 Regression Output Tables

Table 3: Difference-in-Differences Results with PostNAFTA*outNAFTA Interactions

VARIABLES	(1) expUSA	(2) expUSA	(3) lnTrans	(4) lnTrans	(5) ER
PostNAFTA	15.68***	17.18***	-0.0607	-0.205**	-0.188
	(2.553)	(2.032)	(0.109)	(0.0880)	(1.987)
outNAFTA	-38.23***	-38.05***	-0.00327	-0.0199	17.95***
	(3.099)	(3.093)	(0.132)	(0.134)	(1.708)
PostNafta*outNAFTA	-12.31***	-13.08***	0.180	0.255*	14.65***
	(3.332)	(3.233)	(0.142)	(0.140)	(2.189)
lnMS	0.627		-0.0607**		1.596***
	(0.648)		(0.0276)		(0.481)
ER	-0.319**	-0.284**	0.00356	0.000132	
	(0.122)	(0.116)	(0.00519)	(0.00503)	
Constant	53.40***	69.23***	1.691**	0.157**	-39.09***
	(16.43)	(1.431)	(0.699)	(0.0620)	(12.24)
Observations	116	116	116	116	116
R-squared	0.931	0.931	0.119	0.081	0.876

Notes: The outNAFTA treatment group for Table 3 results is Philippines and Thailand. The control group for Table 3 results is Canada and Mexico. Sample includes 26 observations for each country. Data is used from 1980-2007. Standard errors in parenthesis *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Difference-in-Differences Results with PostNAFTA*outNAFTA Interactions

VARIABLES	(1) expUSA	(2) expUSA	(3) lnTrans	(4) lnTrans	(5) ER
PostNAFTA	11.01***	16.48***	-0.169*	-0.204***	1,509
	(2.214)	(1.929)	(0.0889)	(0.0718)	(1,744)
outNAFTA	-7.103**	-17.30***	-0.218*	-0.152**	-2,576
	(3.013)	(1.929)	(0.121)	(0.0718)	(2,369)
PostNafta*outNAFTA	-21.14***	-20.68***	0.327***	0.324***	7,298***
	(2.700)	(2.903)	(0.108)	(0.108)	(2,014)
lnMS	2.135***		-0.0138		-587.5
	(0.507)		(0.0204)		(396.8)
ER	-0.000337***	-0.000411***	1.37e-05***	1.42e-05***	
	(0.000123)	(0.000131)	(4.93e-06)	(4.87e-06)	
Constant	14.79	68.86***	0.505	0.157***	14,880
	(12.90)	(1.364)	(0.518)	(0.0508)	(10,097)
Observations	111	111	111	111	111
R-squared	0.862	0.838	0.210	0.206	0.288

Notes: The outNAFTA treatment group for Table 4 results is Ecuador and Venezuela. The control group for Table 4 results is Canada and Mexico. Sample includes 26 observations for each country. Data is used from 1980-2007. Standard errors in parenthesis *** p<0.01, ** p<0.05, * p<0.1.

B.4 Correlation Coefficients

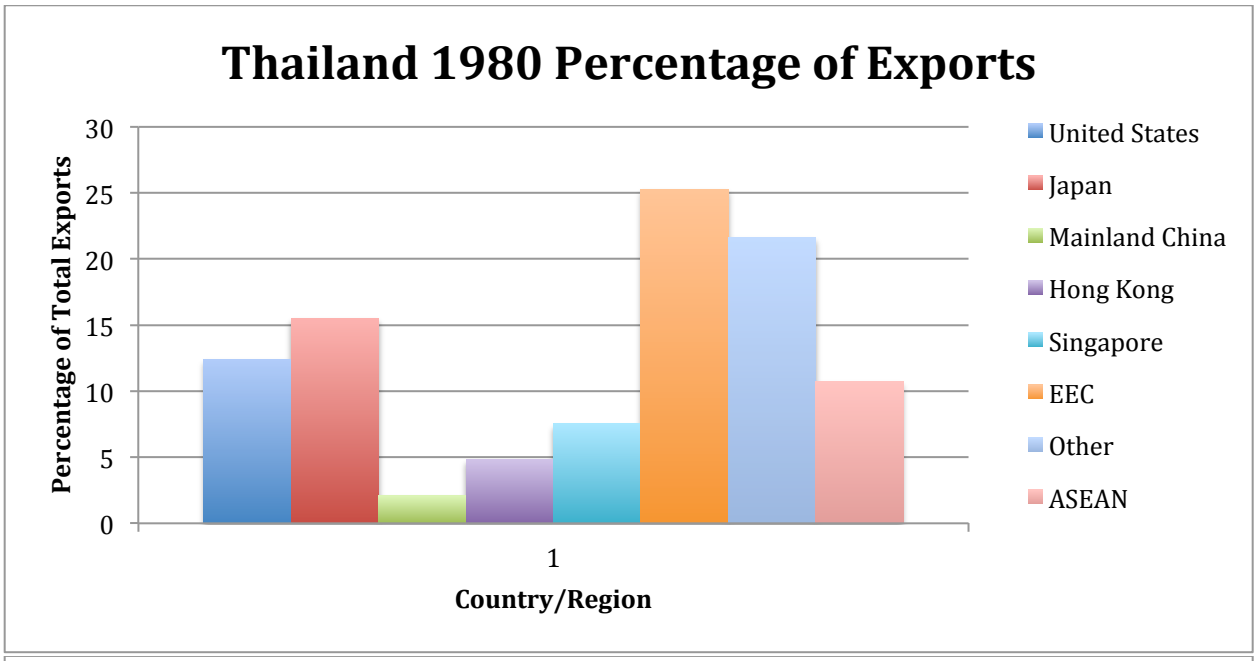
Table 5: Correlation Coefficient Results

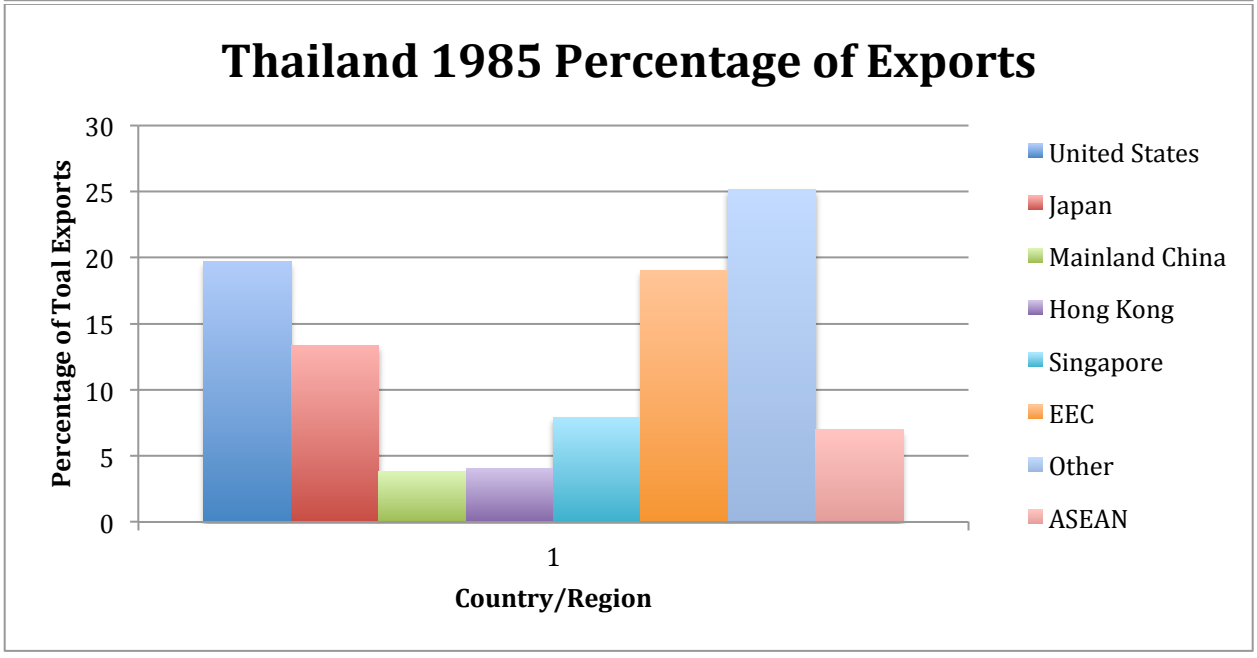
	Percentage of Imports from China
(1) Percentage of Imports from Thailand	-0.356
(2) Percentage of Imports from Philippines	0.511

Notes: Values listed are correlation between Percentage of Imports from China and variables (1) and (2). There is no standard correlation coefficient that defines a linear relationship, but generally |correlation coefficient| closer to 1 indicate a strong linear relationship (Wooldridge 2013). The values of -0.356 and 0.511 resemble little to no linear relationship. Data used is percentage of imports by the United States in the years 1980, 1985, 1990, 1995, 1999, 2005, 2008, and 2009.

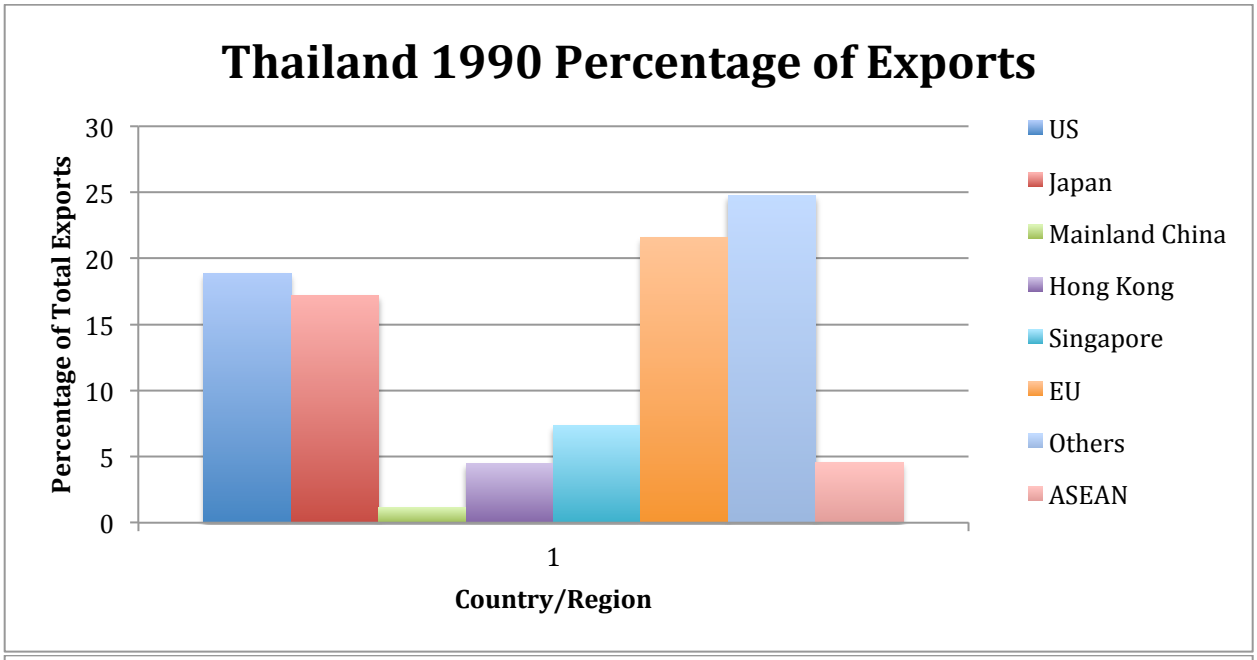
Appendix C[2]: Thailand Changes in Trade by Year

C.1 Thailand's main trading partners via exports:





[2] Notes: For Appendices C-F, figures were constructed via the Direction of Trade Statistics database published by the International Monetary Fund. The absence of data for a particular country in a particular year is because data was not available for that country in that year via DOTS. Years of data used are 1980-2008.


Thailand 1990 Percentage of Exports
Percentage of Total Exports
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Others
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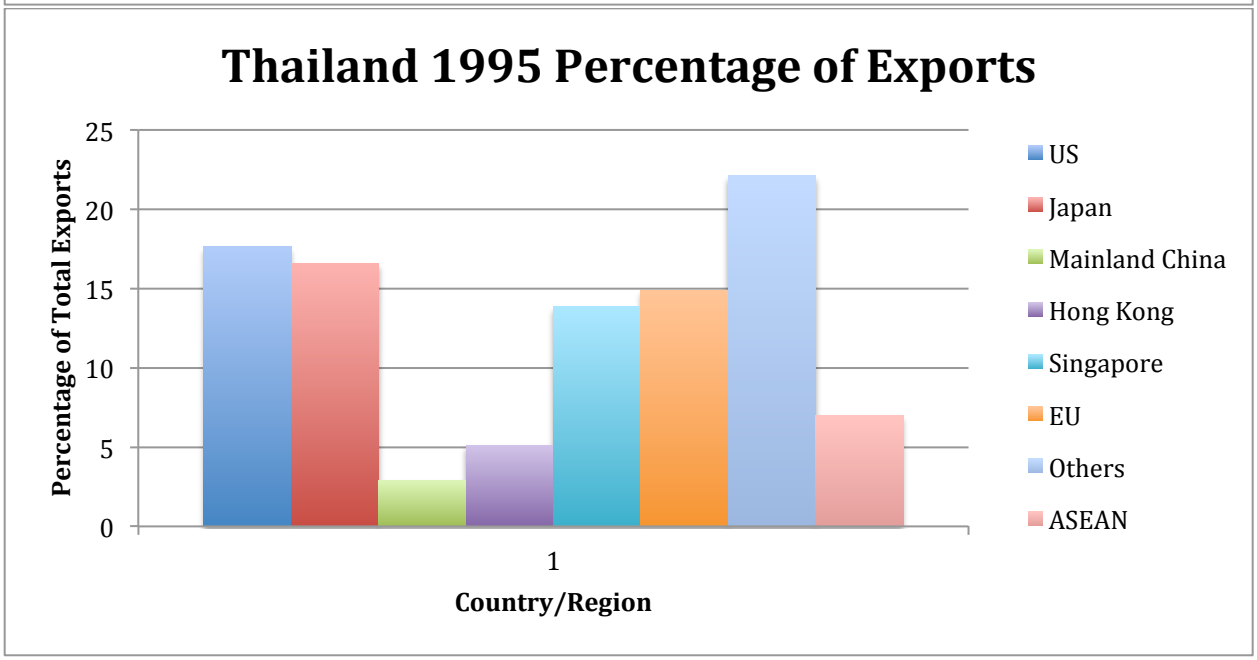
Thailand 1995 Percentage of Exports
Percentage of Total Exports
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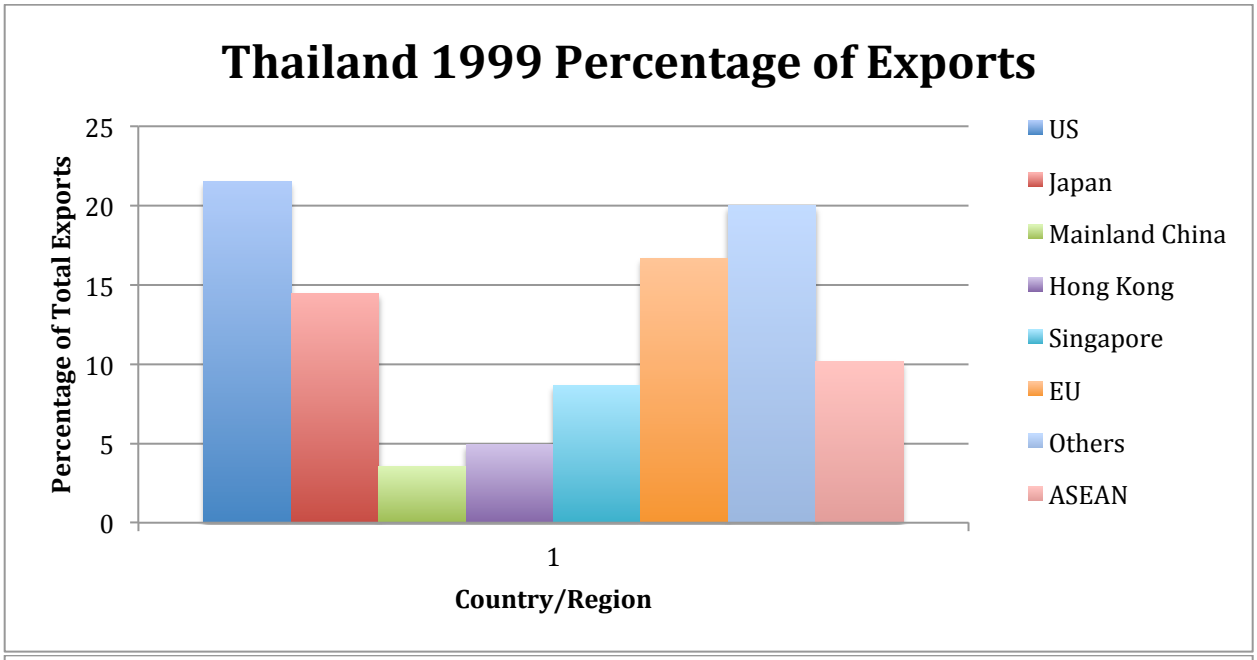
Thailand 1999 Percentage of Exports
Percentage of Total Exports
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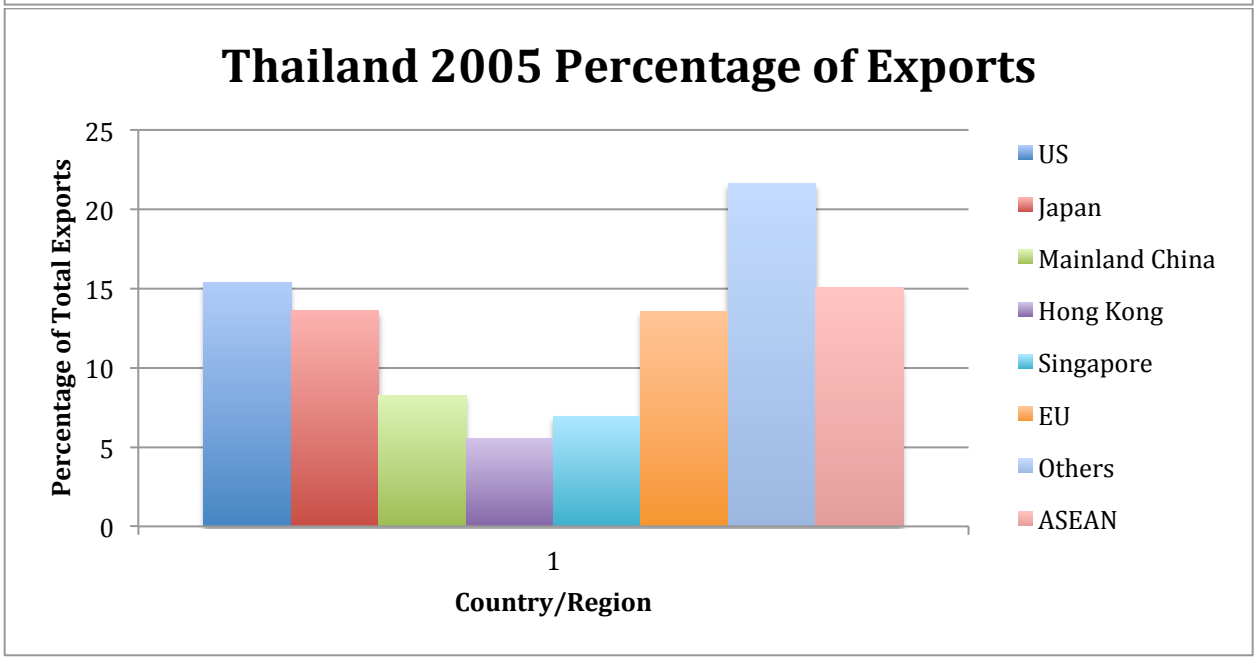
Thailand 2005 Percentage of Exports
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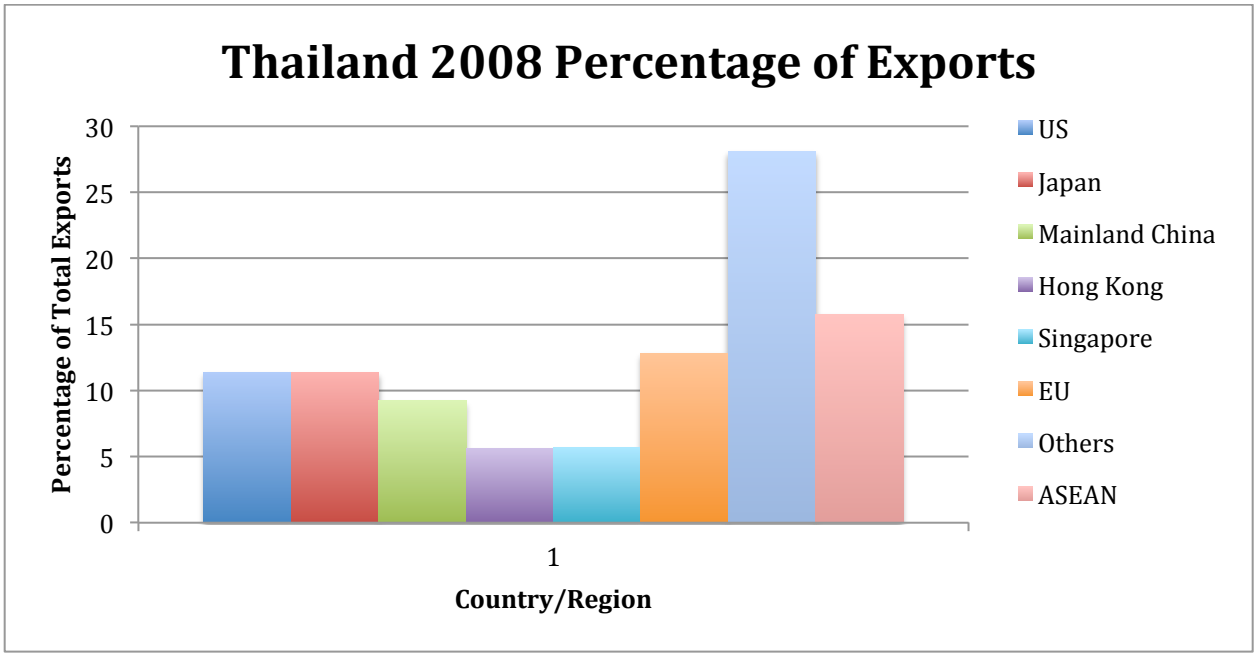
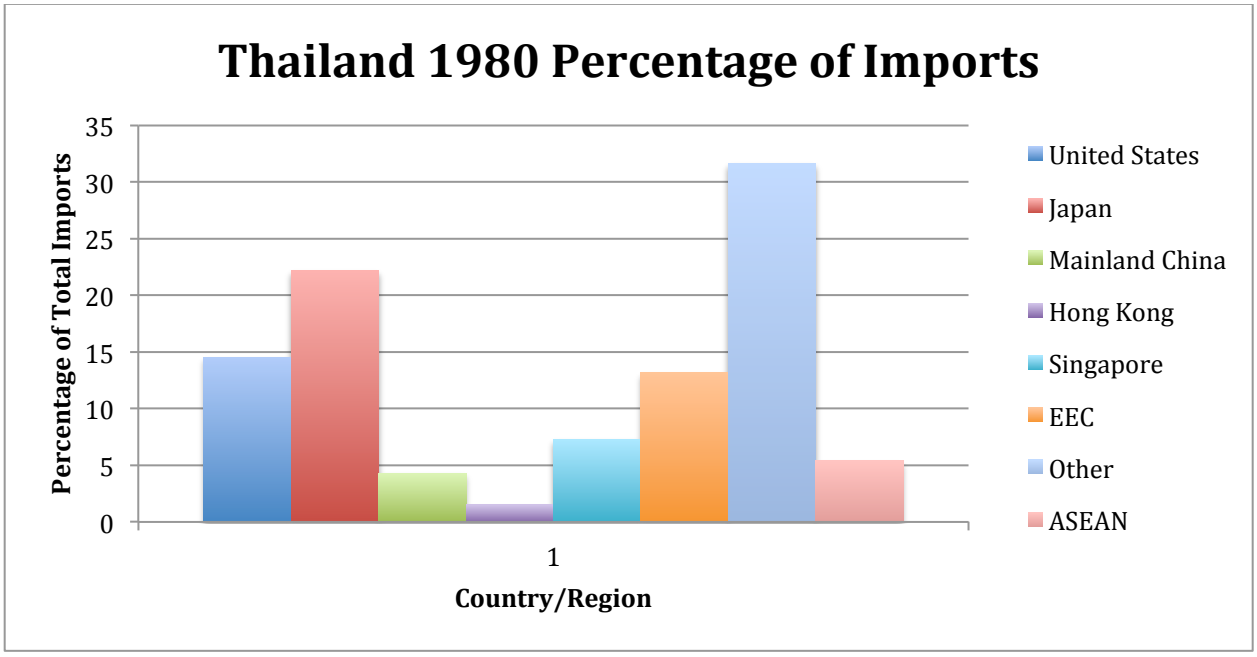
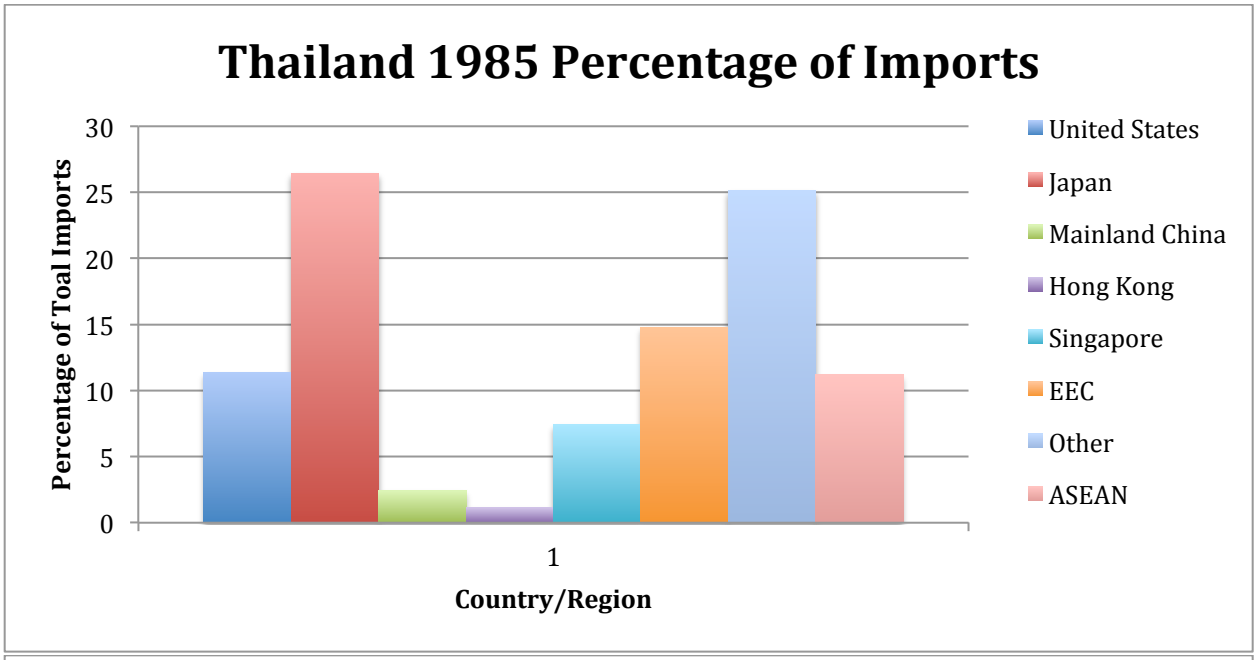


C.2 Thailand's main trading partners via imports:

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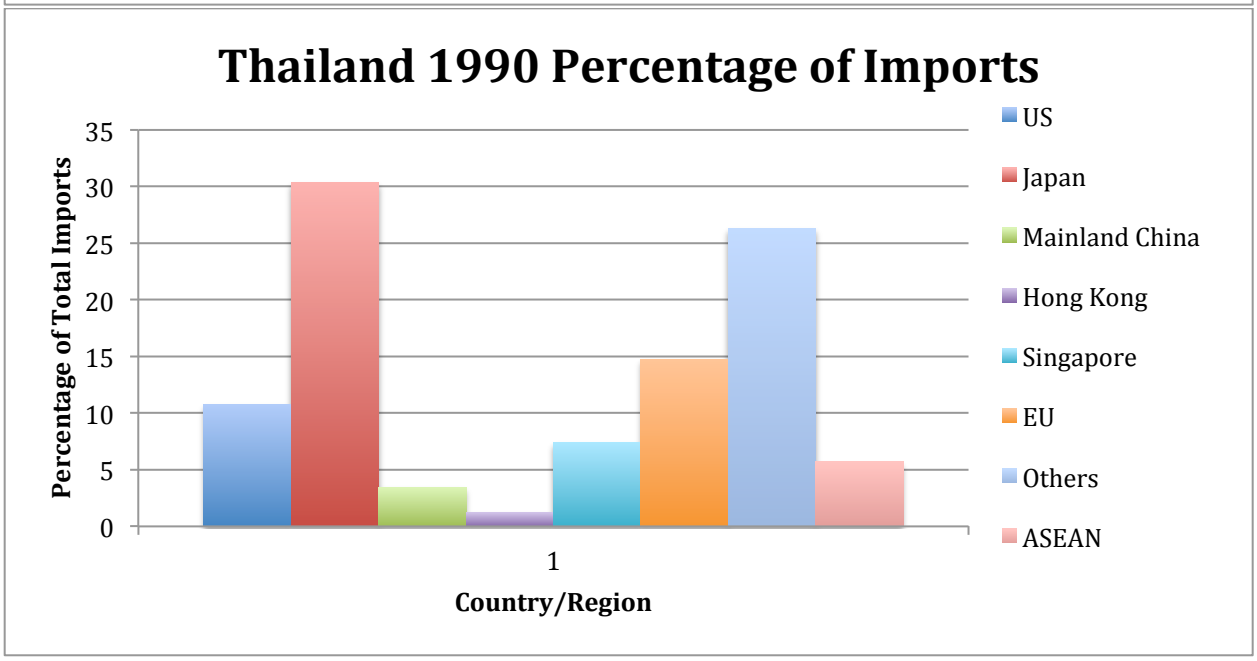
Thailand 1990 Percentage of Imports
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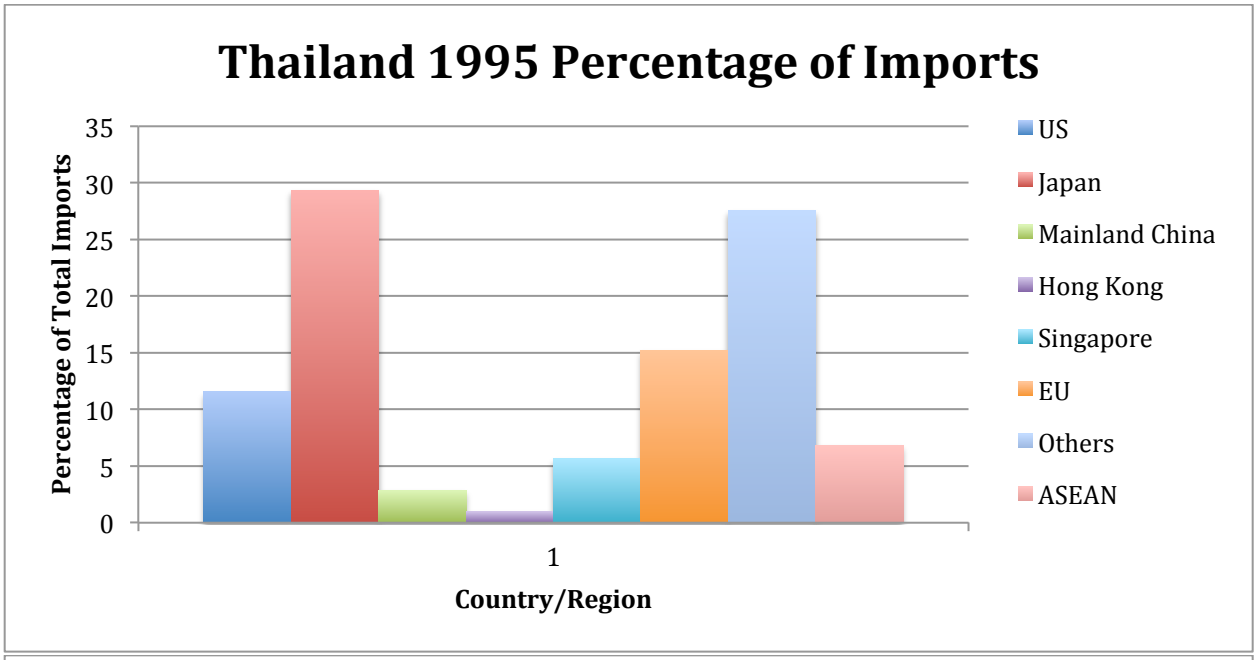
Thailand 1995 Percentage of Imports
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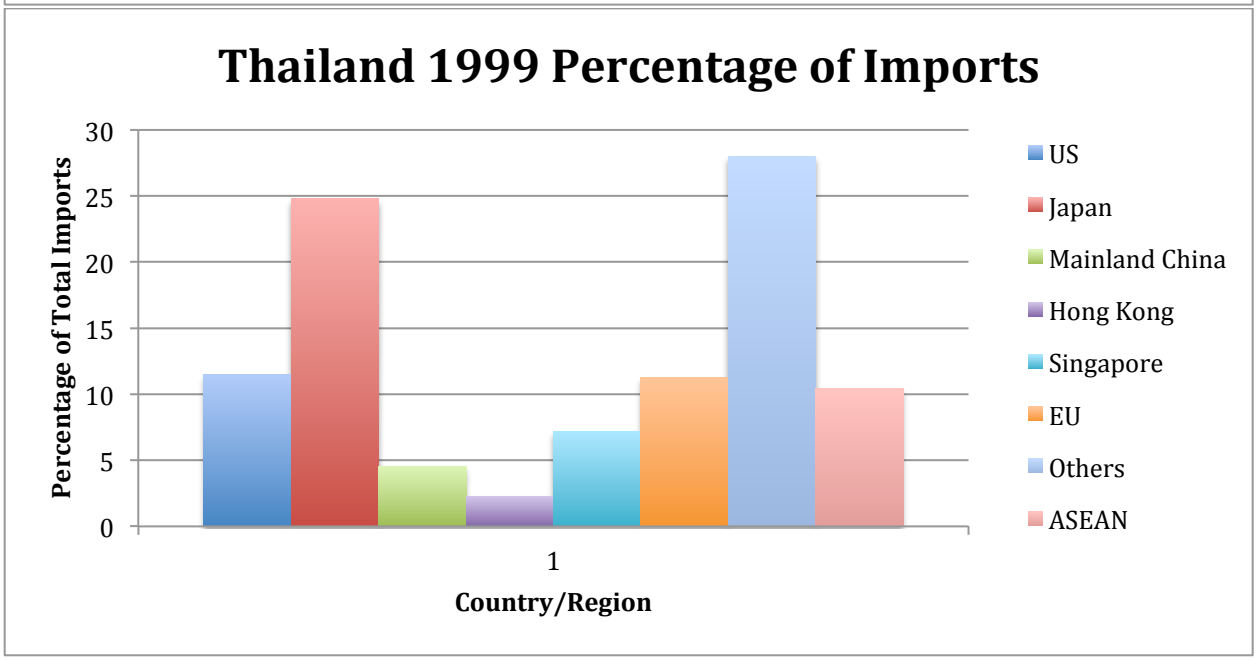
Thailand 1999 Percentage of Imports
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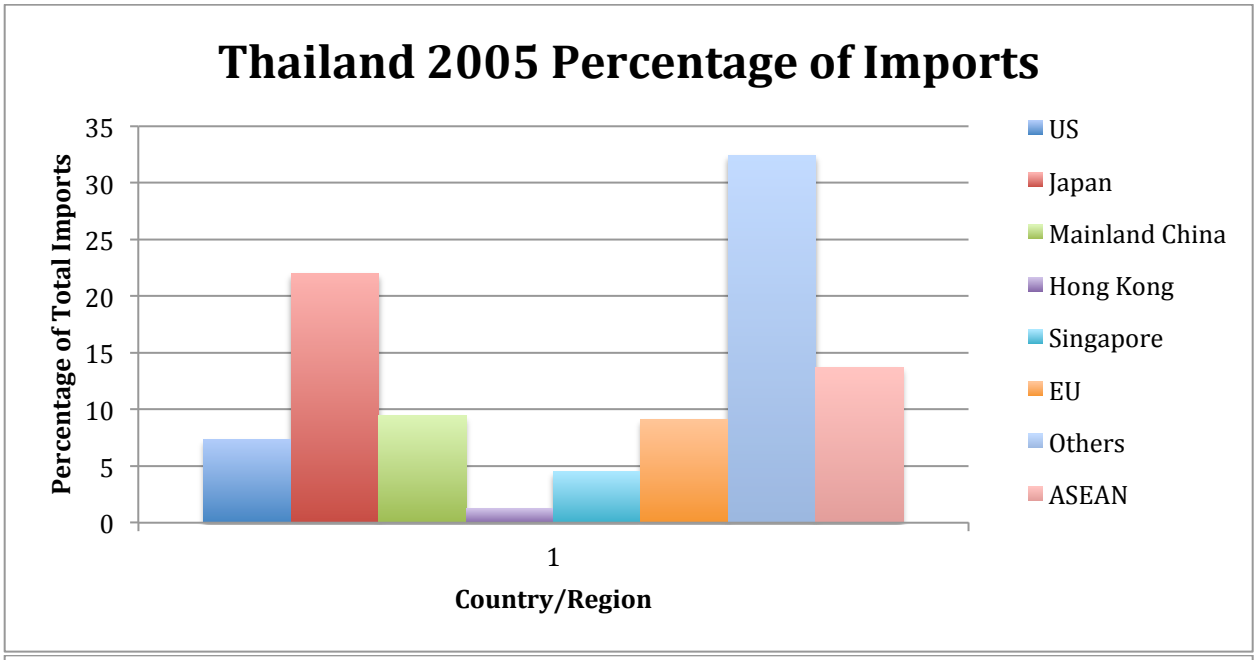
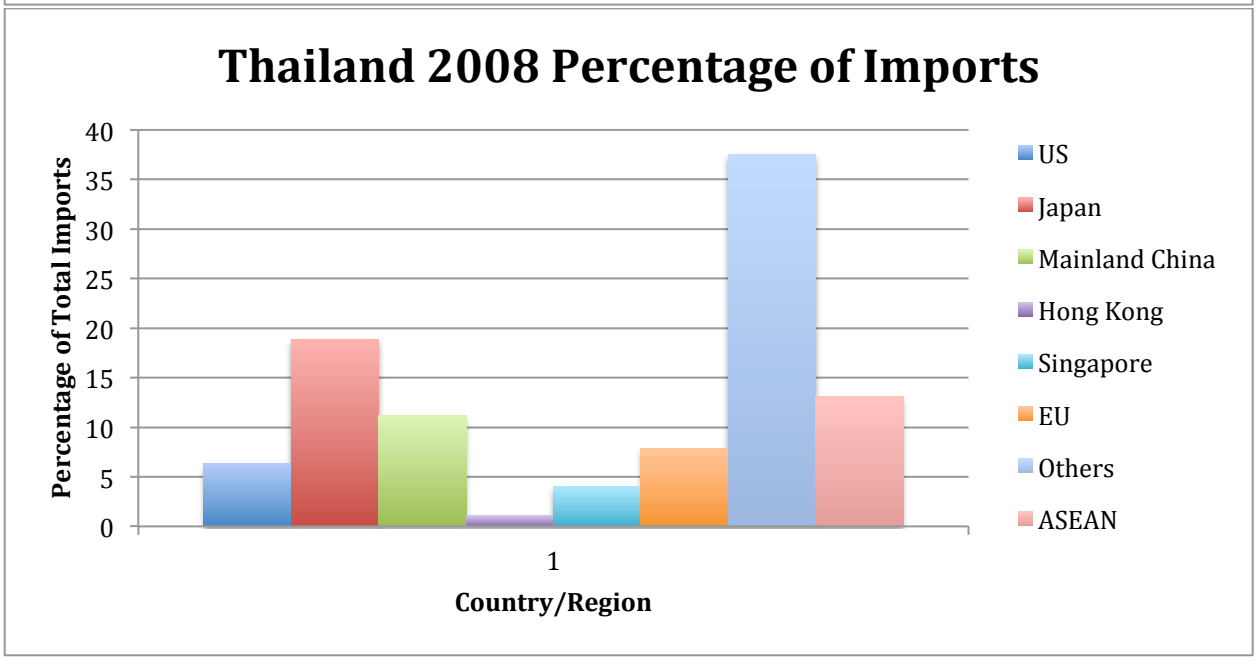
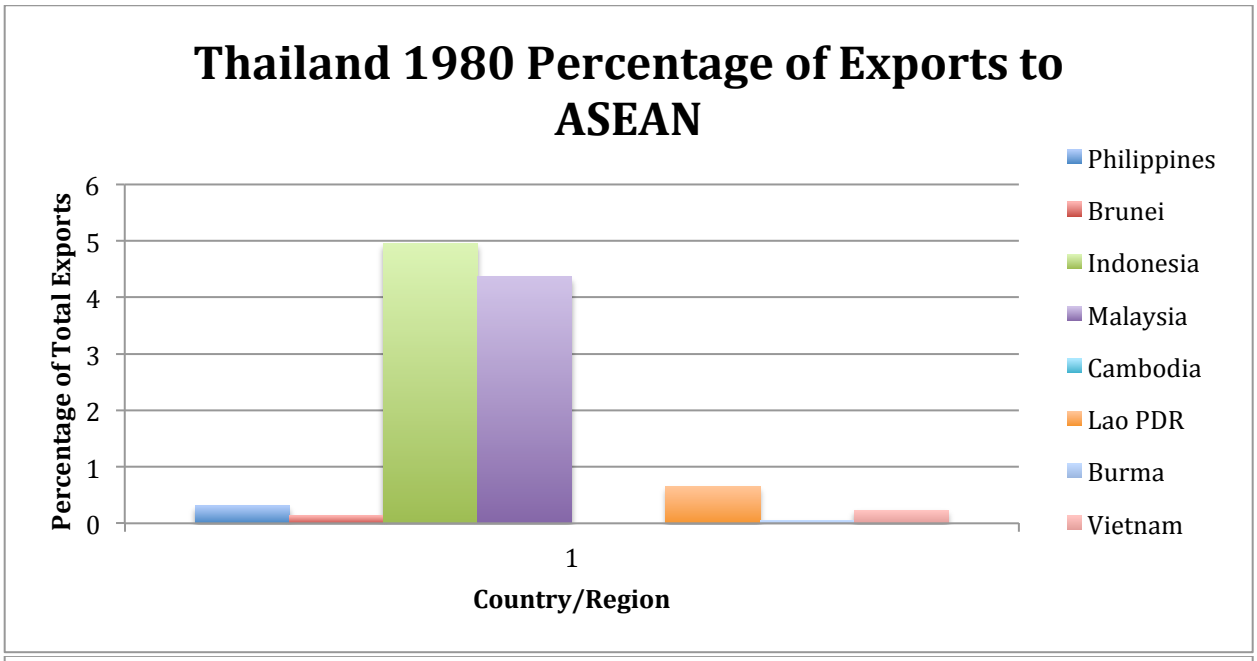
ASEAN

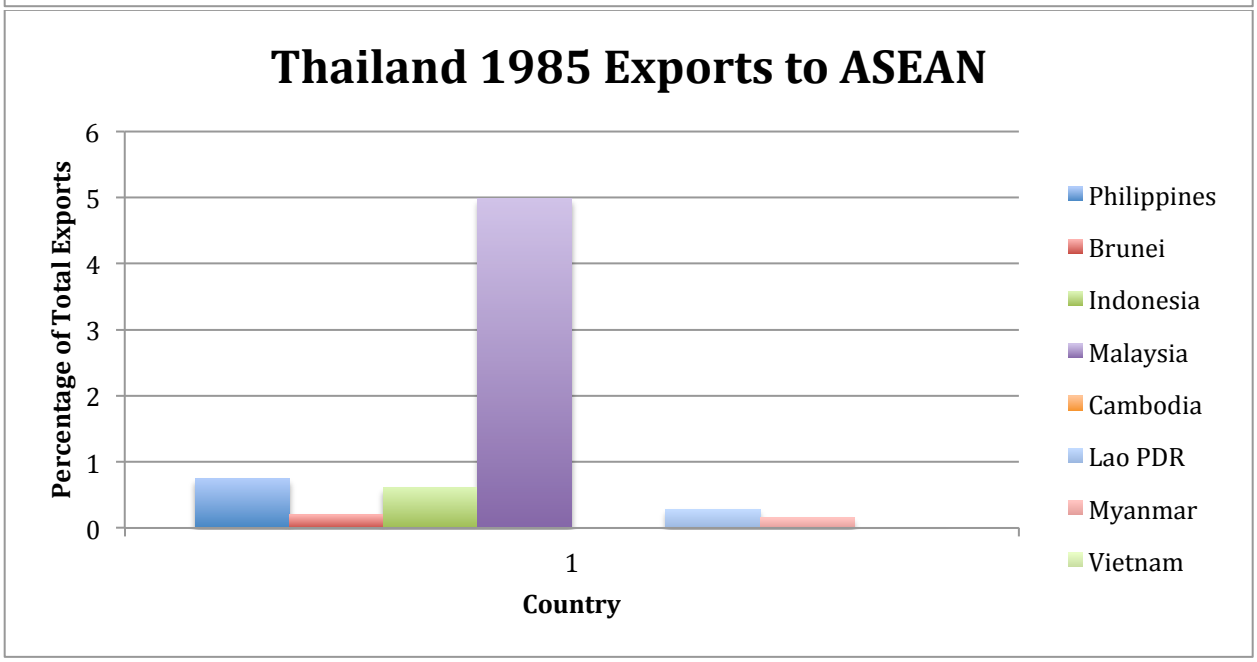

Thailand 2005 Percentage of Imports
Percentage of Total Imports
35
30
25
20
15
10
5
0
1
Country/Region
US
Japan
Mainland China
Hong Kong
Singapore
EU
Others
ASEAN

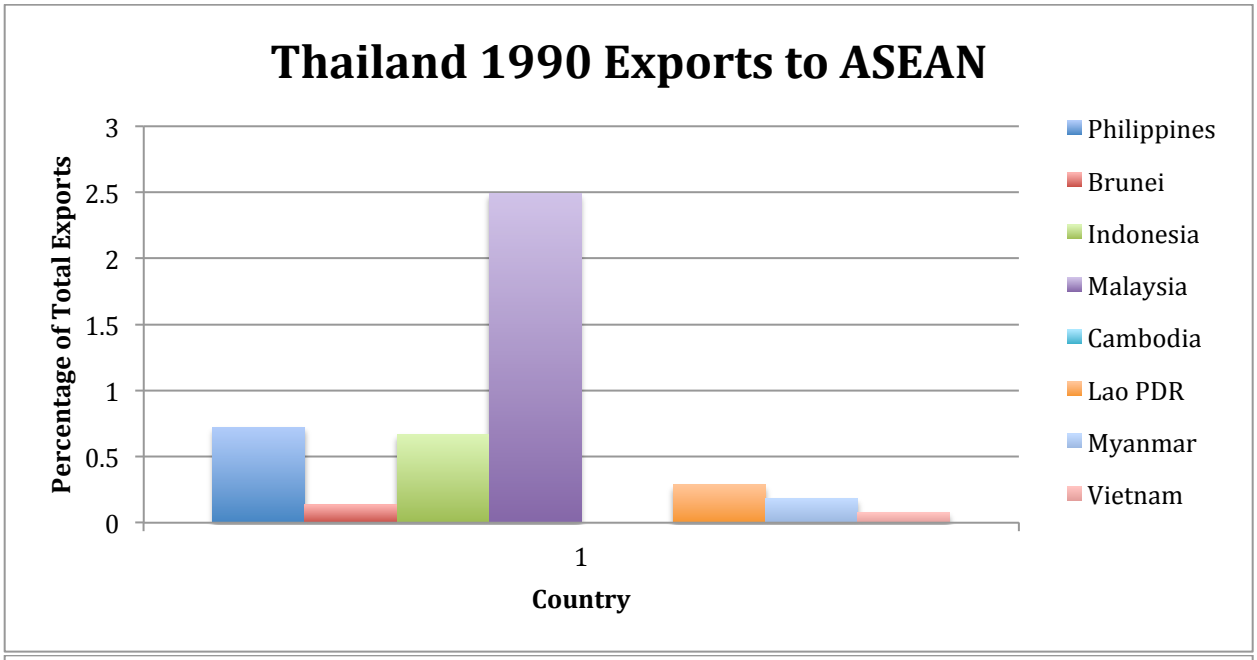

Thailand 2008 Percentage of Imports
Percentage of Total Imports
40
35
30
25
20
15
10
5
0
1
Country/Region
US
Japan
Mainland China
Hong Kong
Singapore
EU
Others
ASEAN

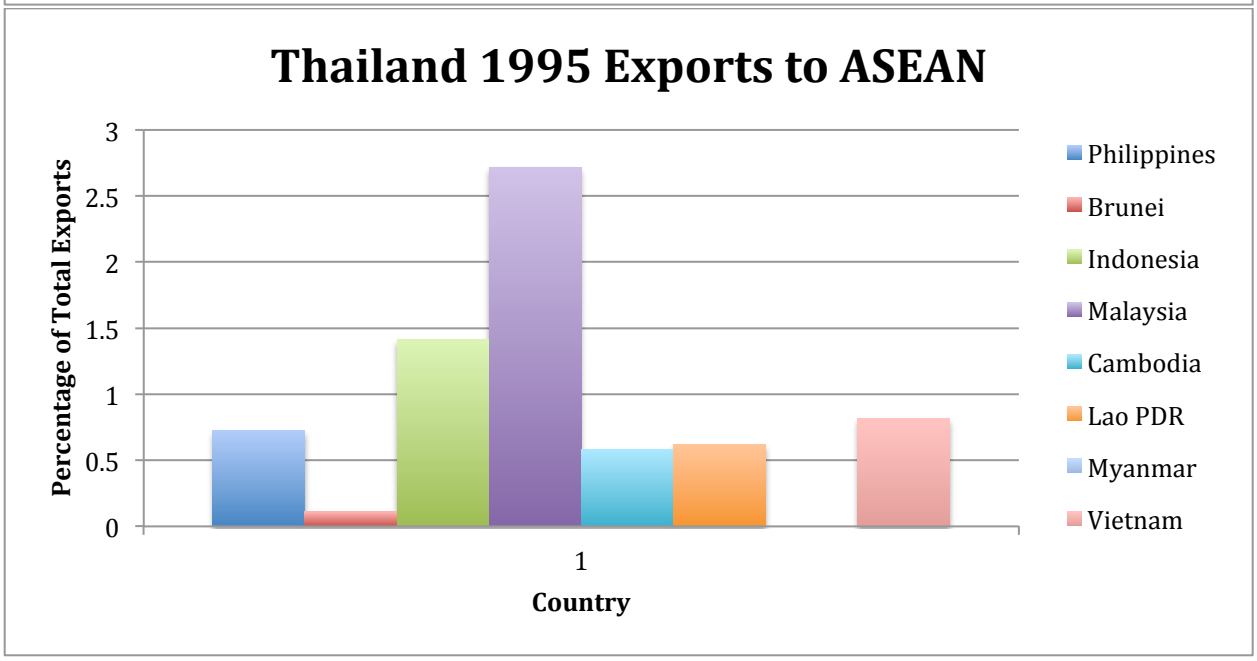
Appendix D: Thailand's Trade within ASEAN

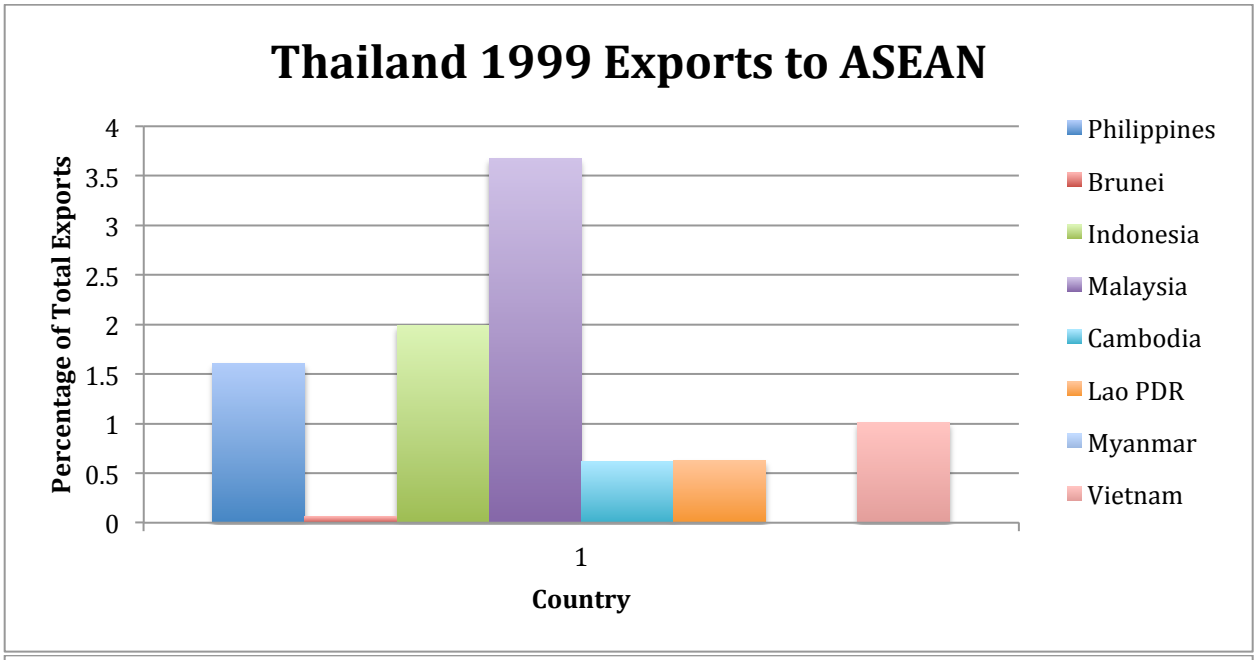
D.1 Thailand's main trade in ASEAN via exports:

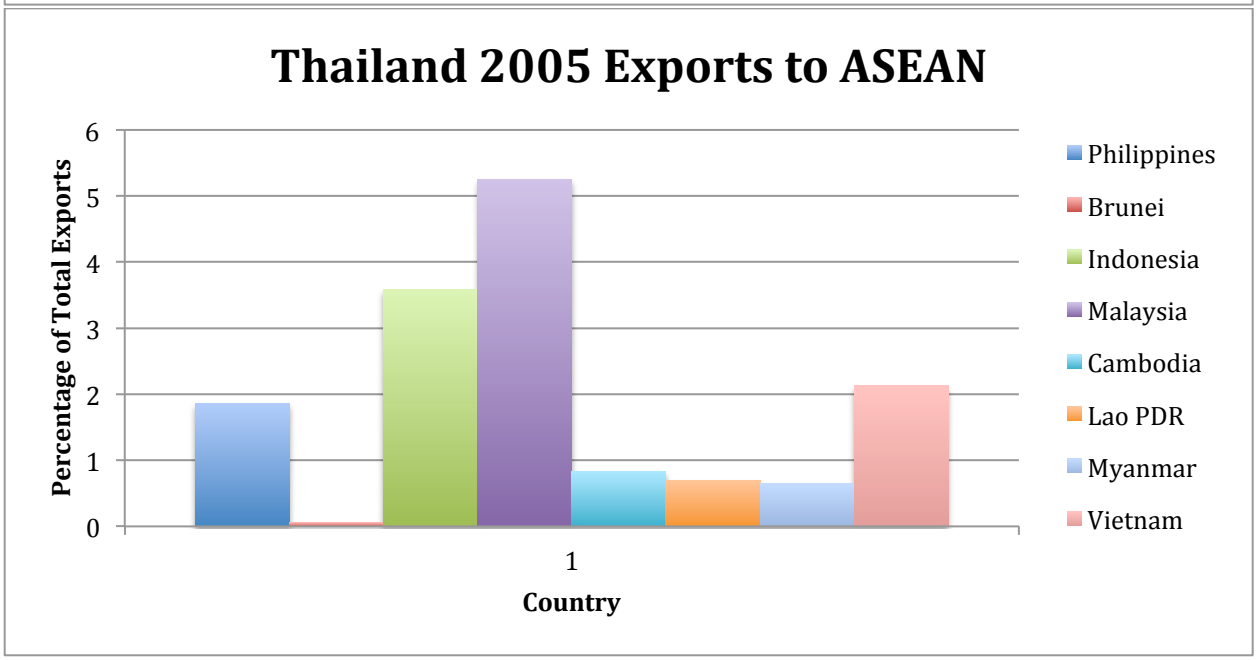


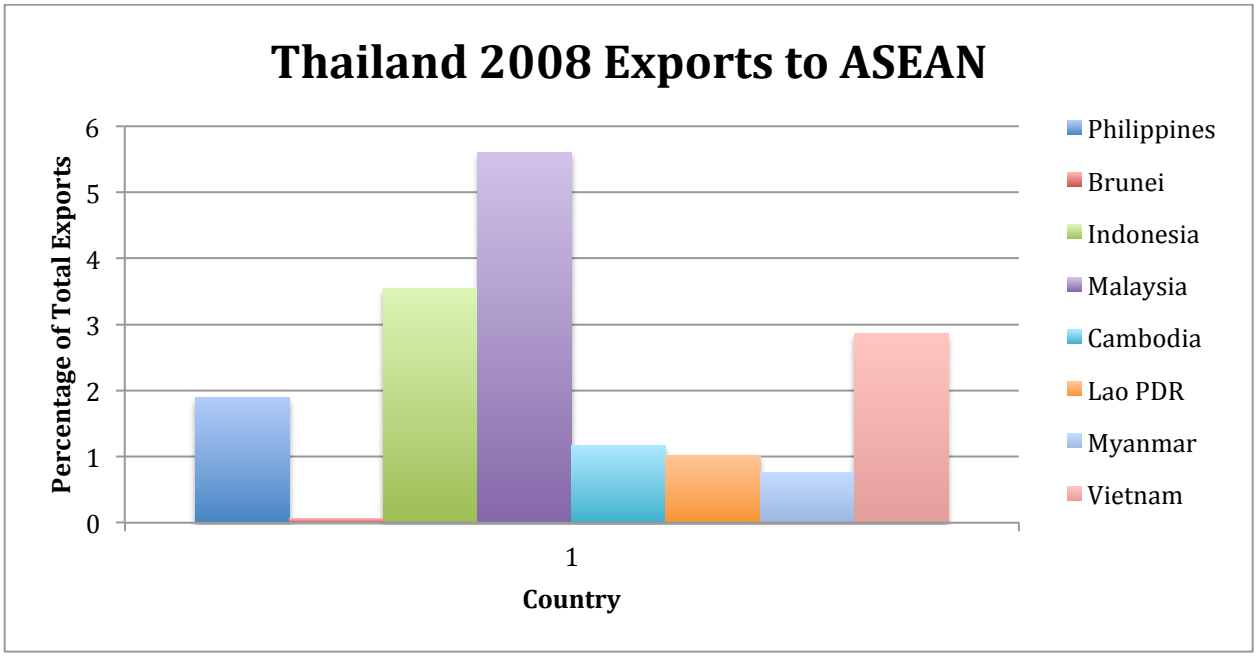



Thailand 1990 Exports to ASEAN
Percentage of Total Exports
3
2.5
2
1.5
1
0.5
0
1
Country
Philippines
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

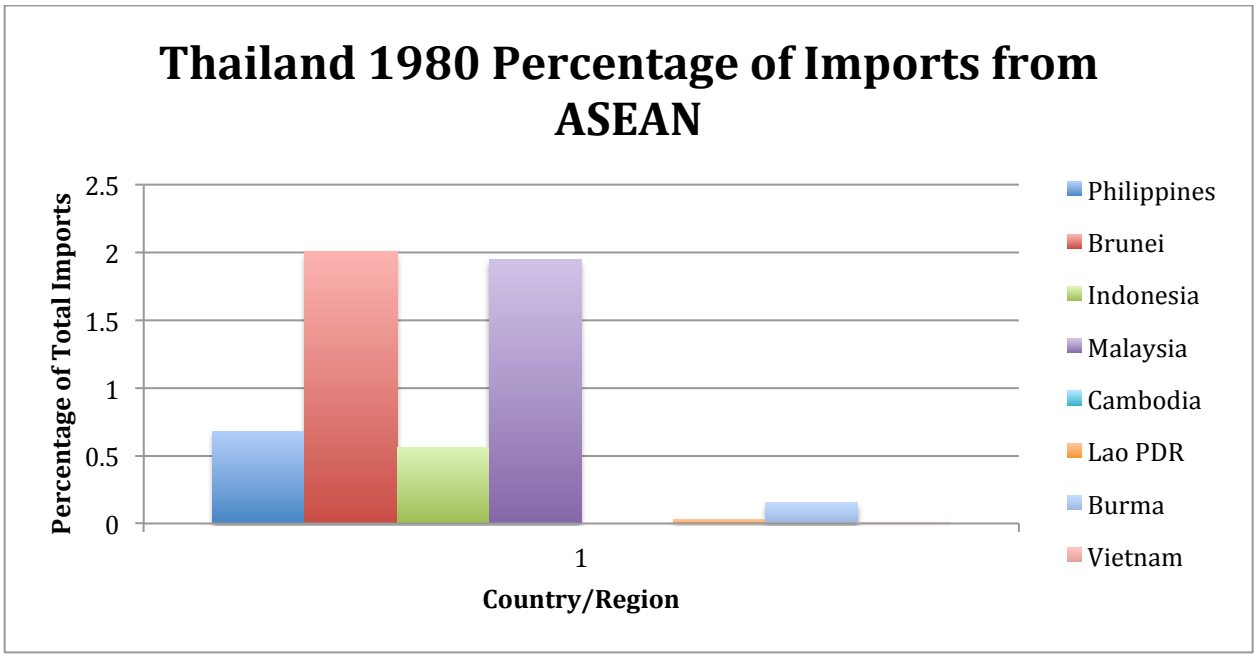

Thailand 1995 Exports to ASEAN
Percentage of Total Exports
3
2.5
2
1.5
1
0.5
0
1
Country
Philippines
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

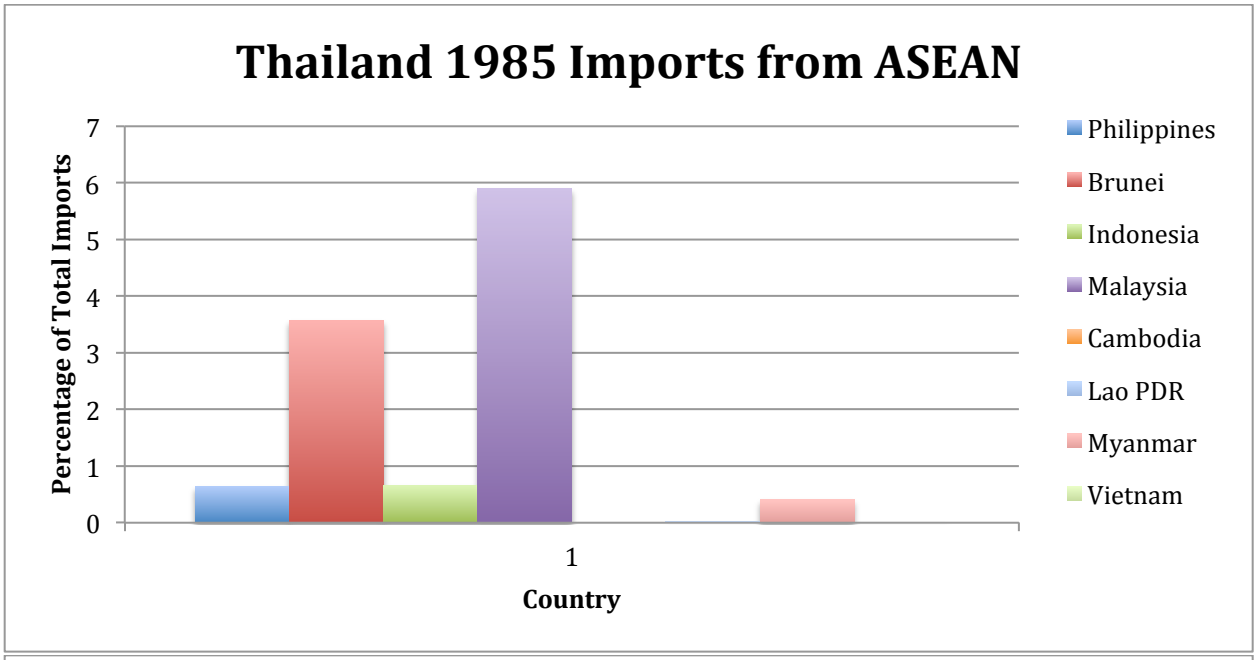

Thailand 1999 Exports to ASEAN
Percentage of Total Exports
4
3.5
3
2.5
2
1.5
1
0.5
0
1
Country
Philippines
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

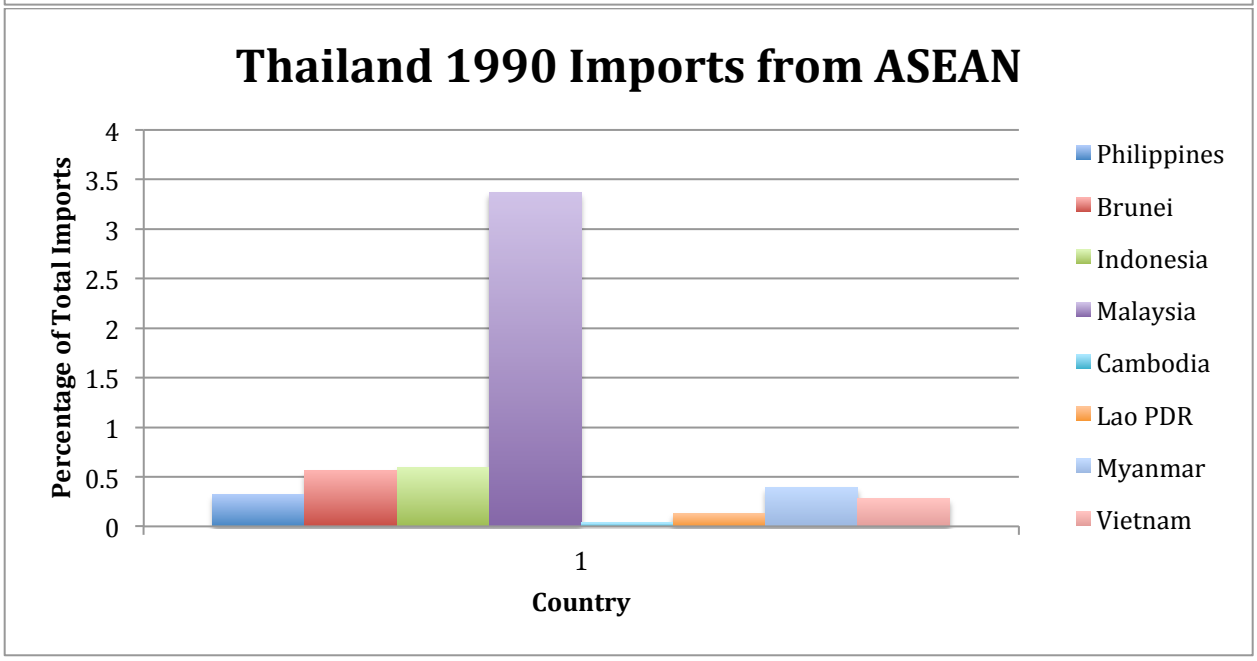

Thailand 2005 Exports to ASEAN
Percentage of Total Exports
6
5
4
3
2
1
0
1
Country
Philippines
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

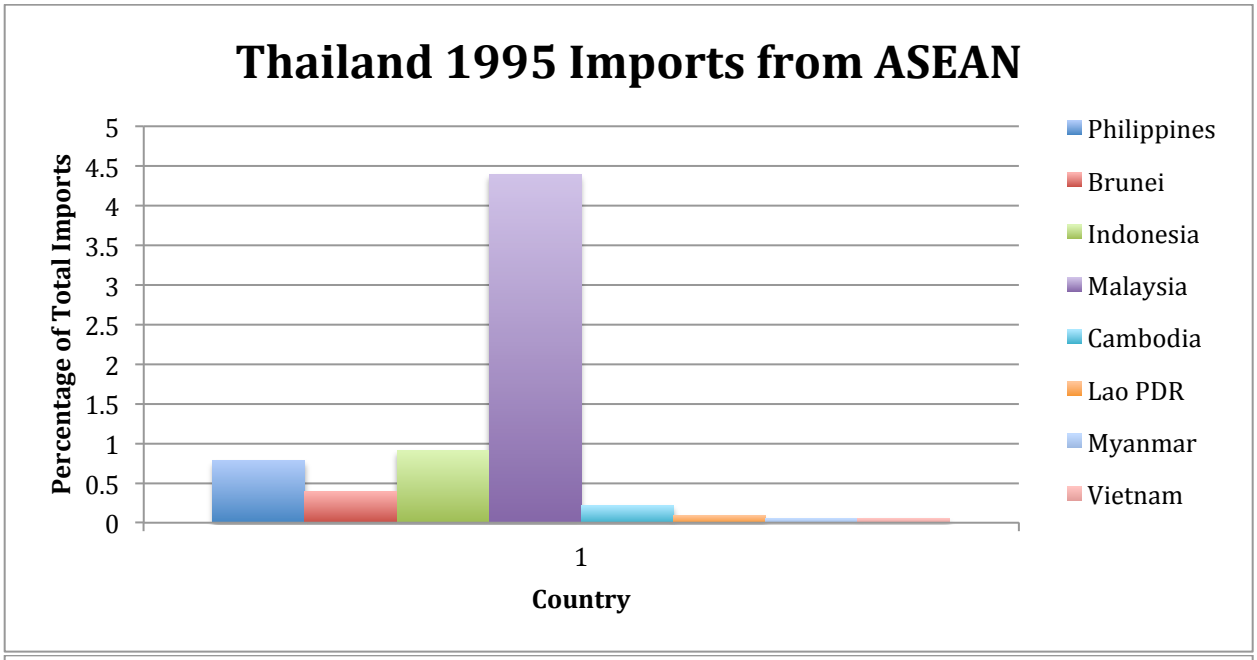


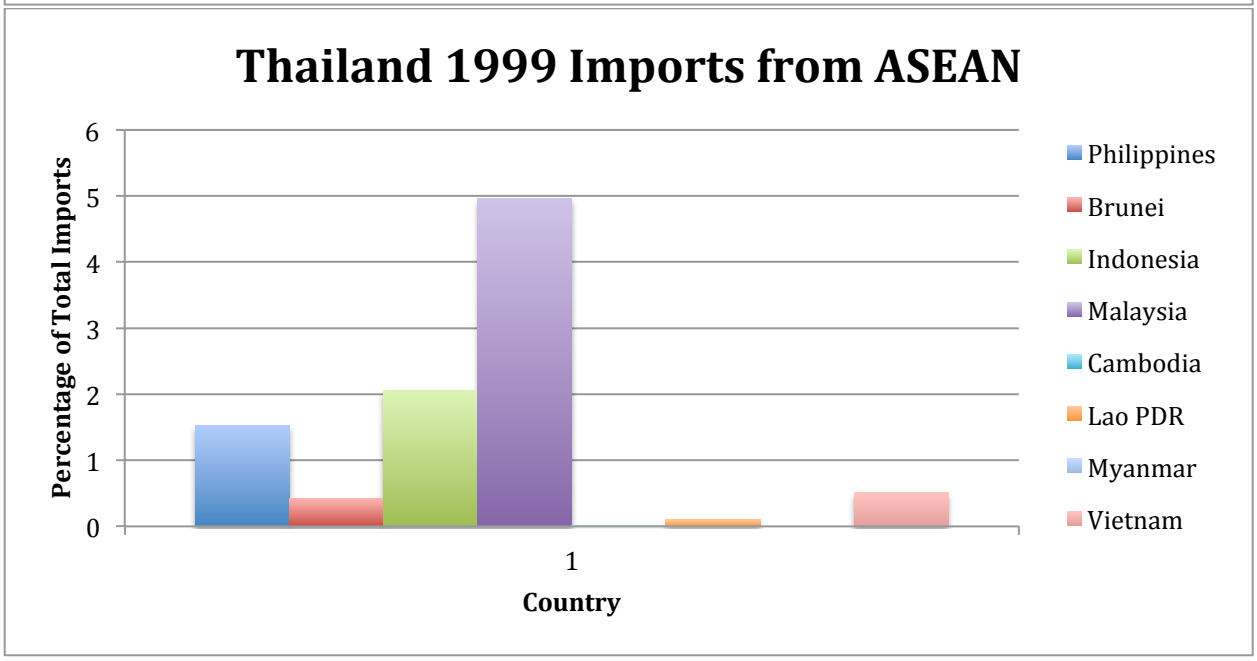
D.2 Thailand's main trade in ASEAN via imports:

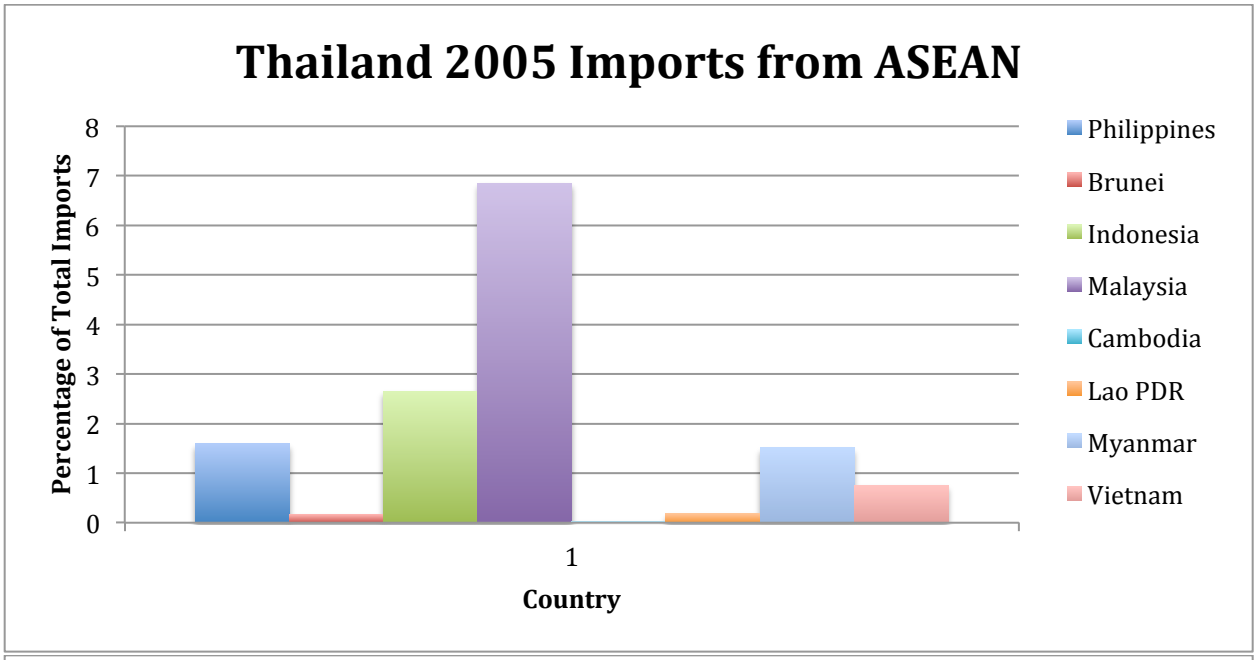


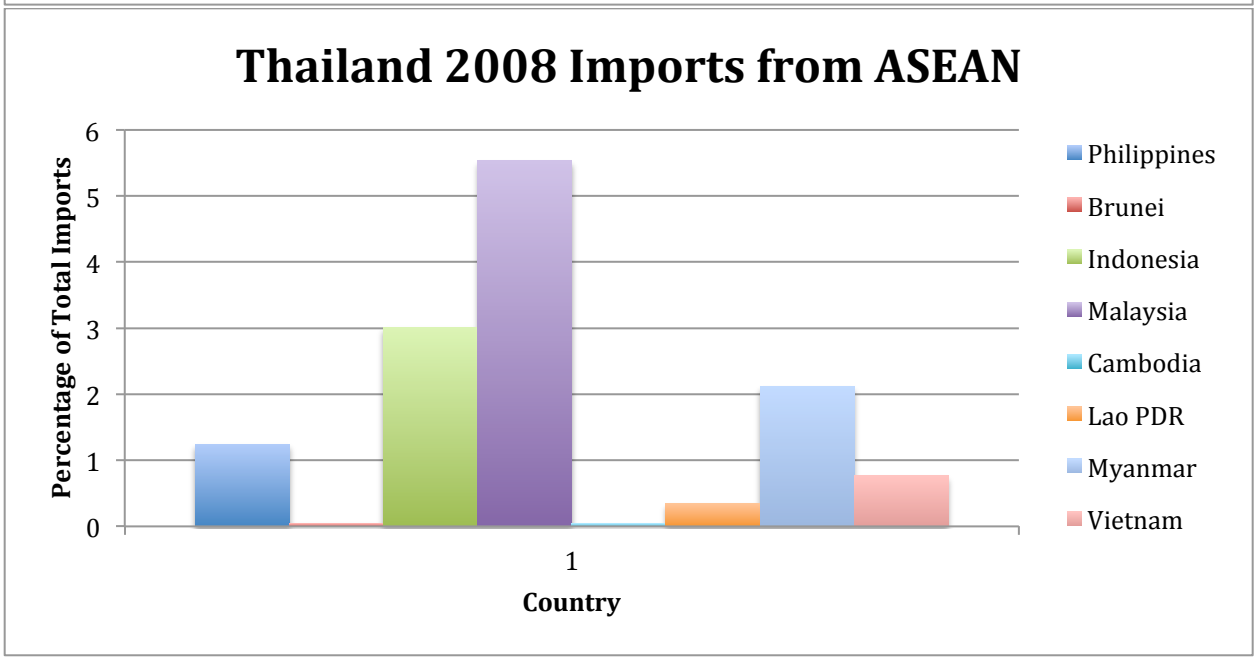

Thailand 1985 Imports from ASEAN
Percentage of Total Imports
7
6
5
4
3
2
1
0
1
Country
Philippines
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam


Thailand 1990 Imports from ASEAN
Percentage of Total Imports
4
3.5
3
2.5
2
1.5
1
0.5
0
1
Country
Philippines
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam


Thailand 1995 Imports from ASEAN
Percentage of Total Imports
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1
Country
Philippines
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

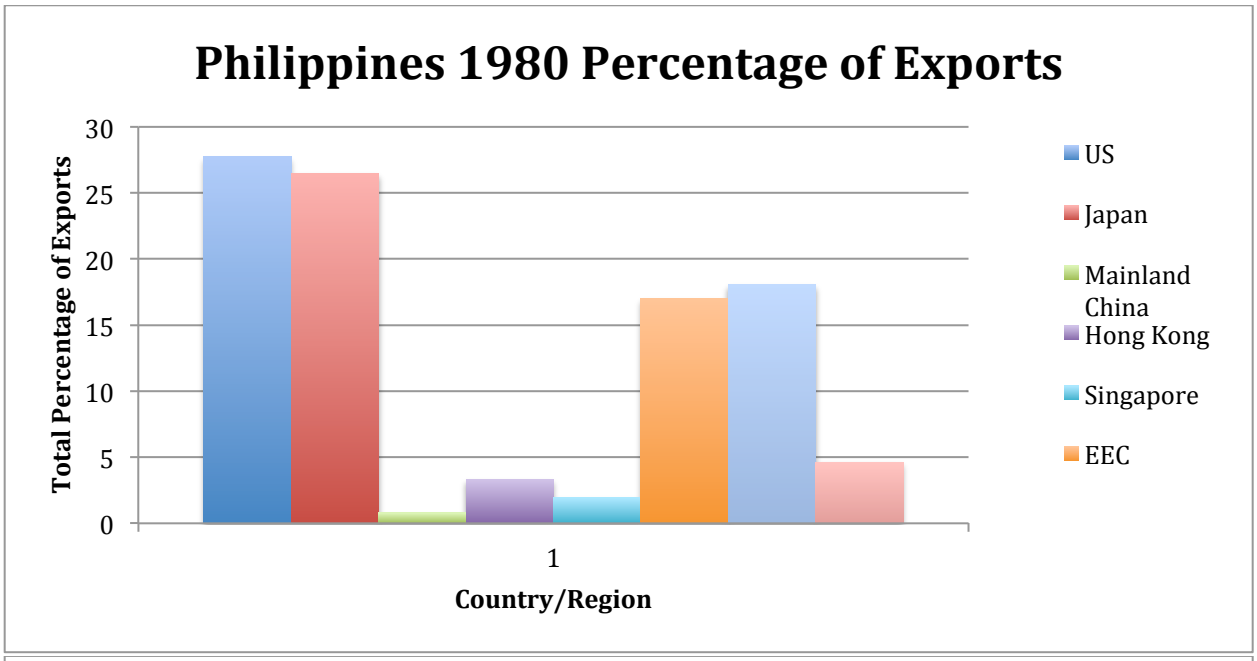

Thailand 1999 Imports from ASEAN
Percentage of Total Imports
6
5
4
3
2
1
0
1
Country
Philippines
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

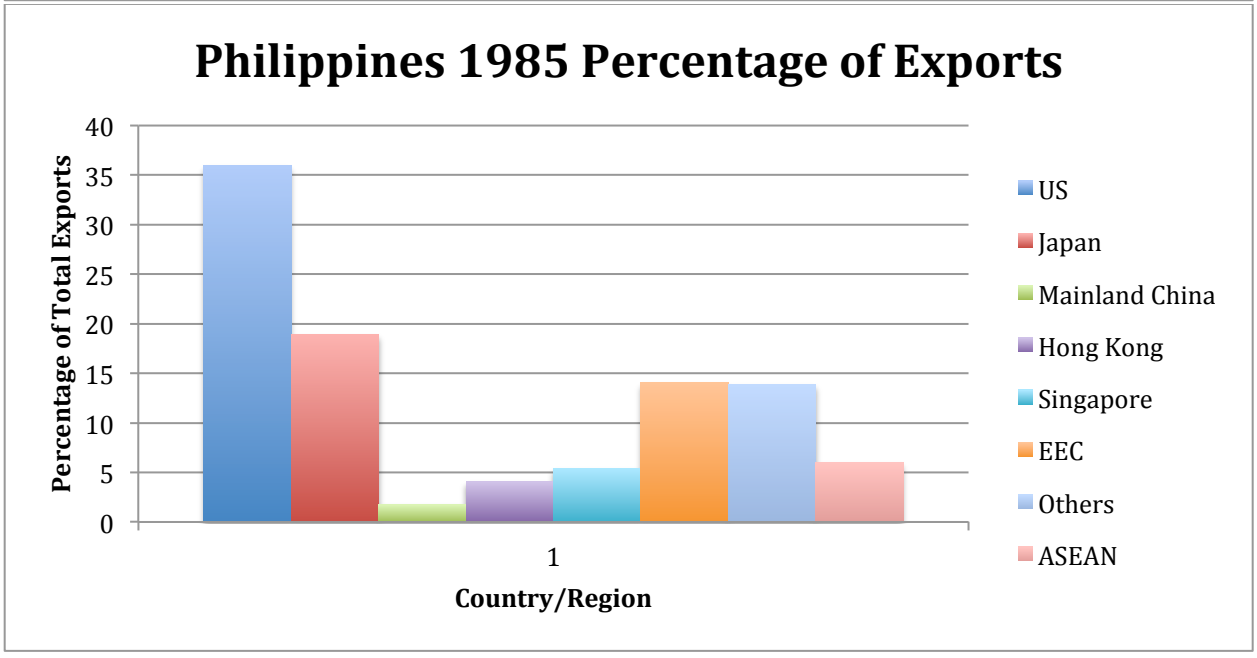

Thailand 2005 Imports from ASEAN
Percentage of Total Imports
8
7
6
5
4
3
2
1
0
1
Country
Philippines
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

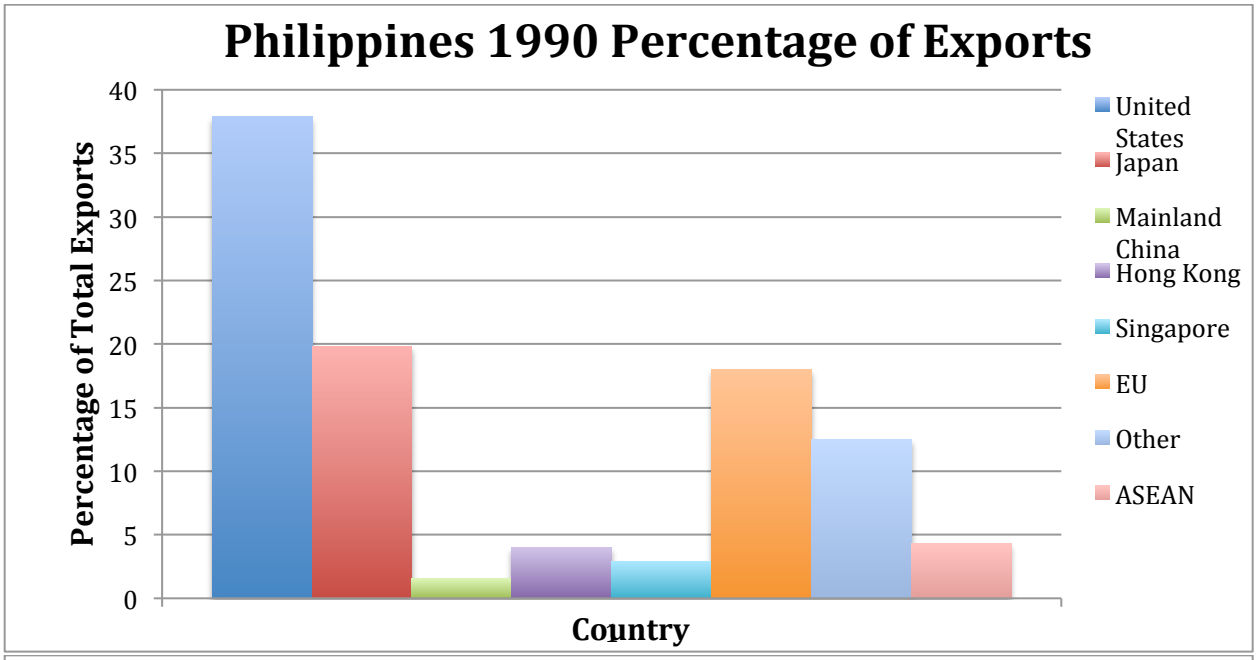

Thailand 2008 Imports from ASEAN
Percentage of Total Imports
6
5
4
3
2
1
0
1
Country
Philippines
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

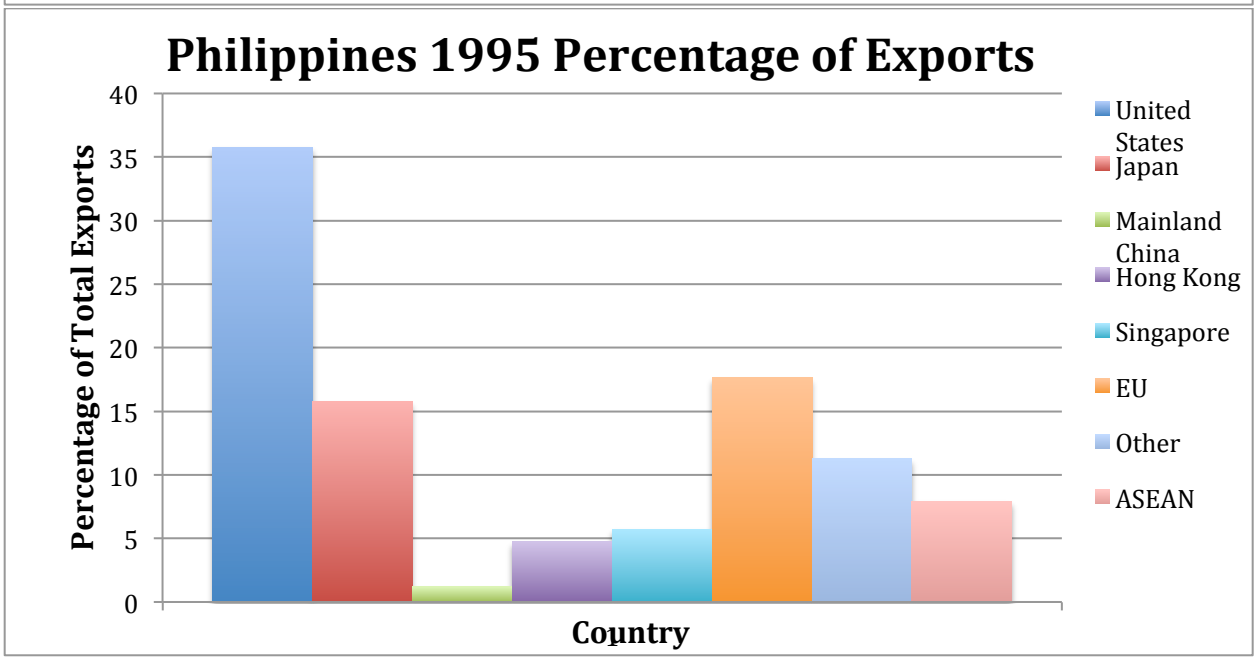
Appendix E: Philippines Changes in Trade by Year

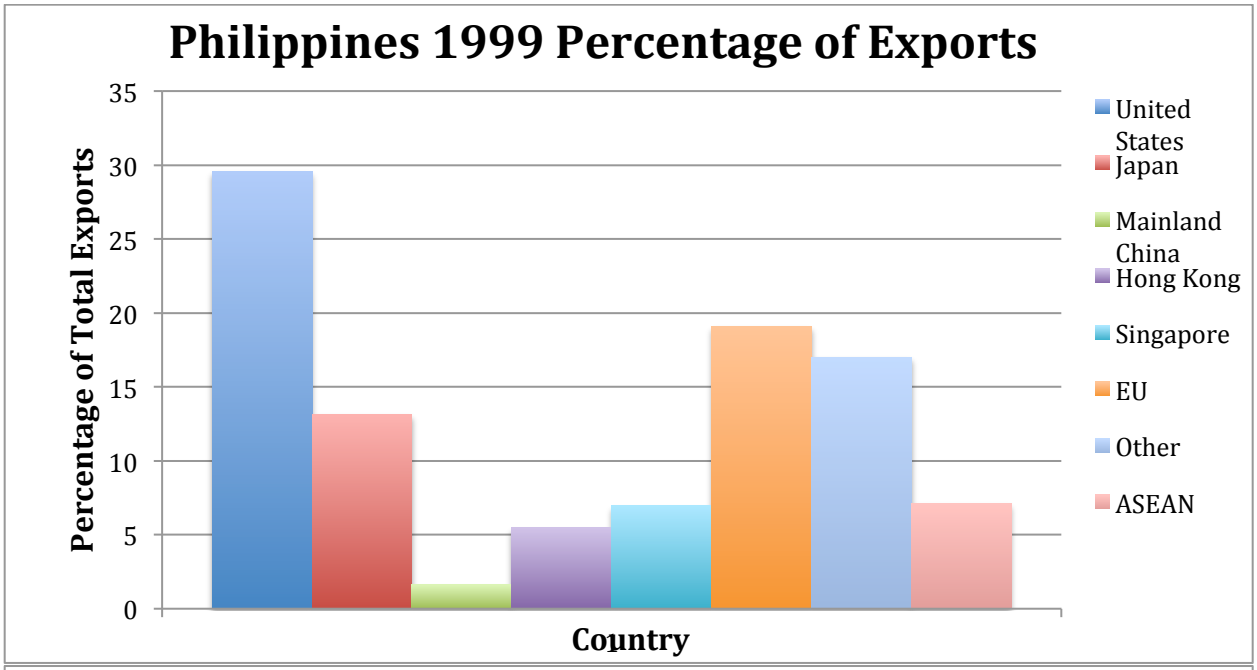
E.1 Philippines' main trading partners via exports

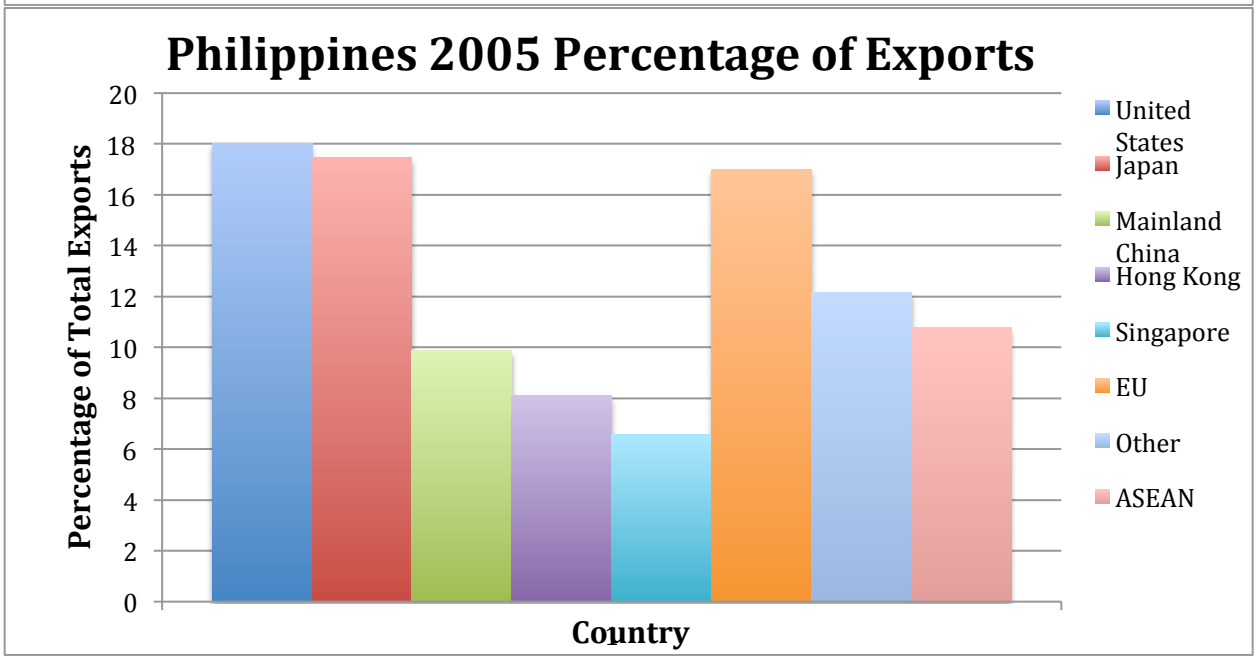


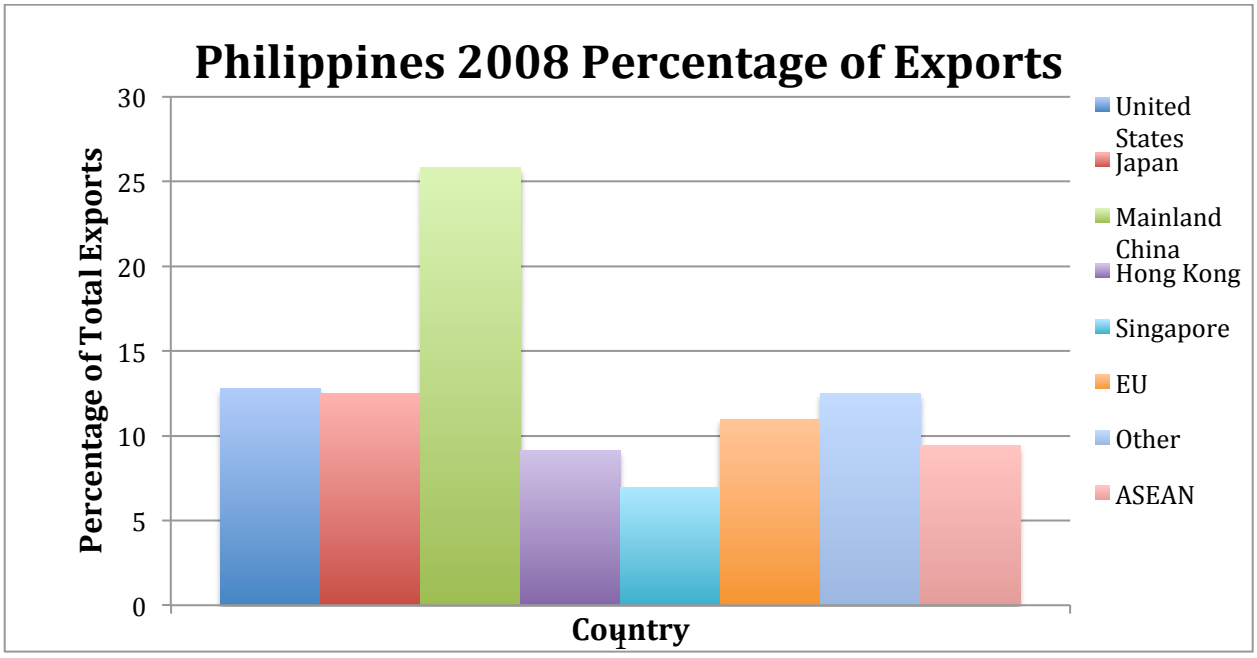



Philippines 1990 Percentage of Exports
Percentage of Total Exports
40
35
30
25
20
15
10
5
0
Country
United States
Japan
Mainland China
Hong Kong
Singapore
EU
Other
ASEAN

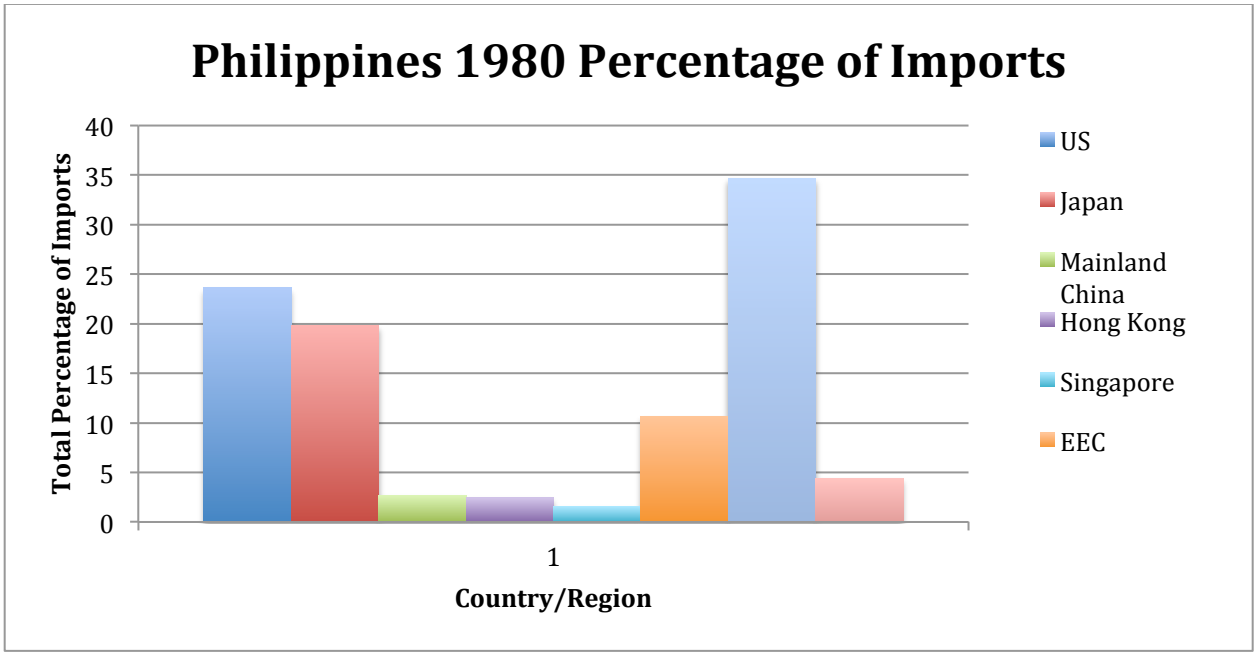

Philippines 1995 Percentage of Exports
Percentage of Total Exports
40
35
30
25
20
15
10
5
0
Country
United States
Japan
Mainland China
Hong Kong
Singapore
EU
Other
ASEAN

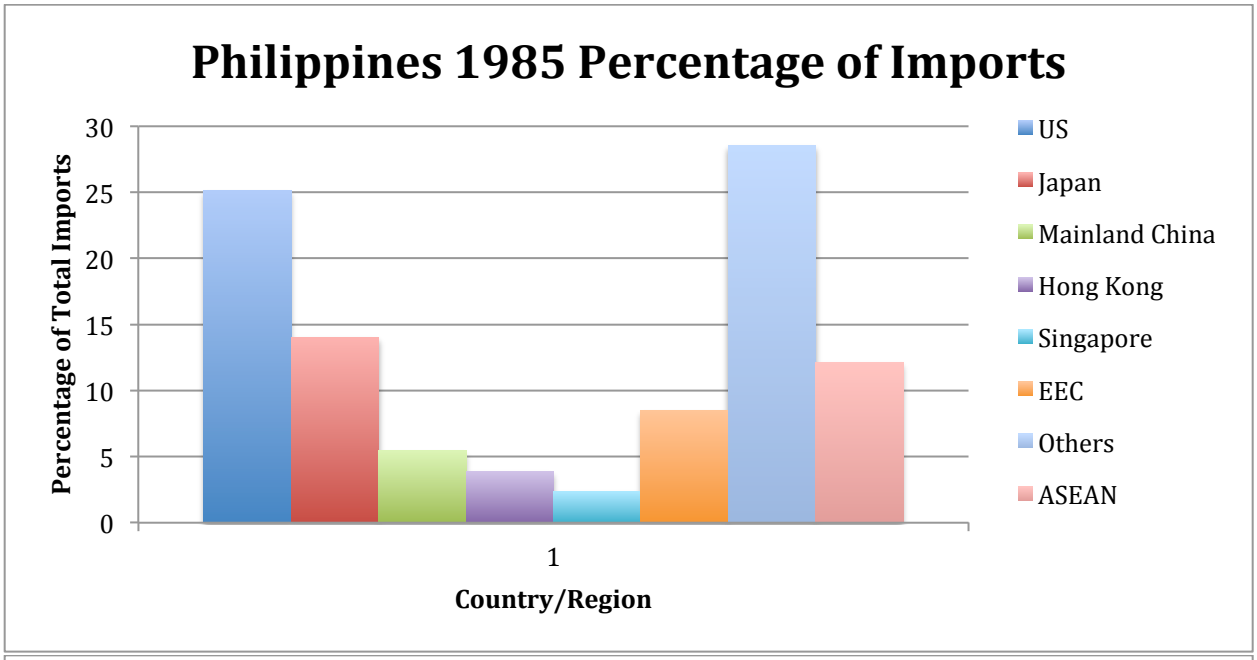

Philippines 1999 Percentage of Exports
Percentage of Total Exports
35
30
25
20
15
10
5
0
Country
United States
Japan
Mainland China
Hong Kong
Singapore
EU
Other
ASEAN

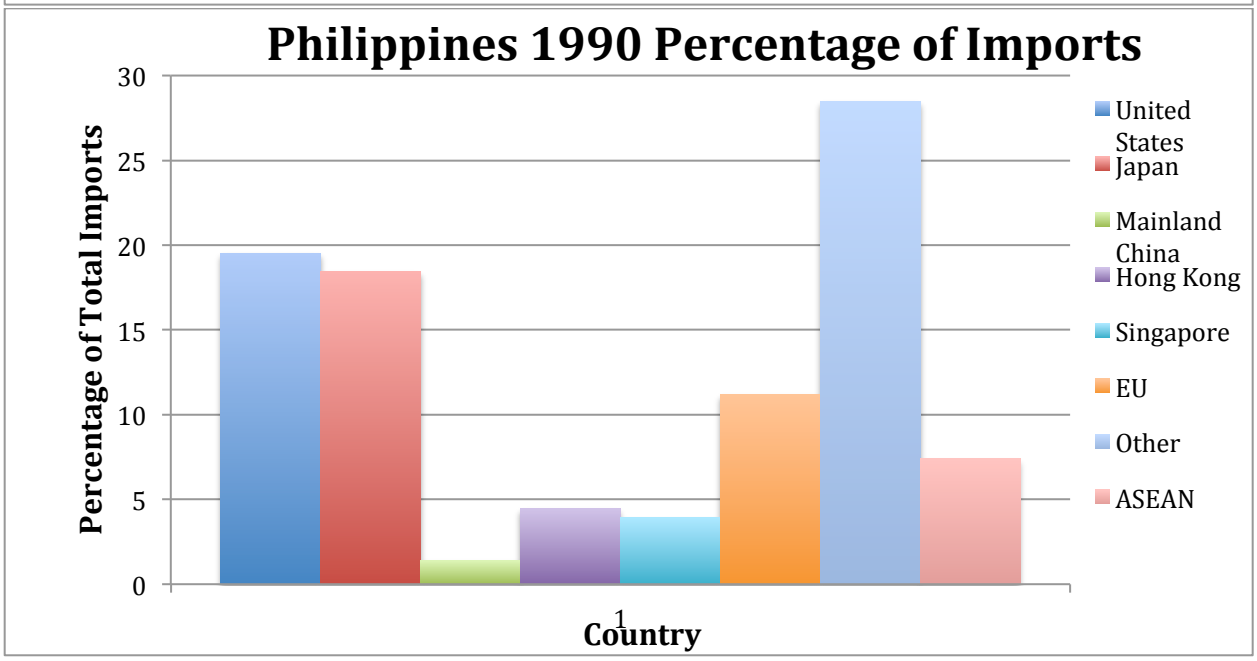

Philippines 2005 Percentage of Exports
Percentage of Total Exports
20
18
16
14
12
10
8
6
4
2
0
Country
United States
Japan
Mainland China
Hong Kong
Singapore
EU
Other
ASEAN

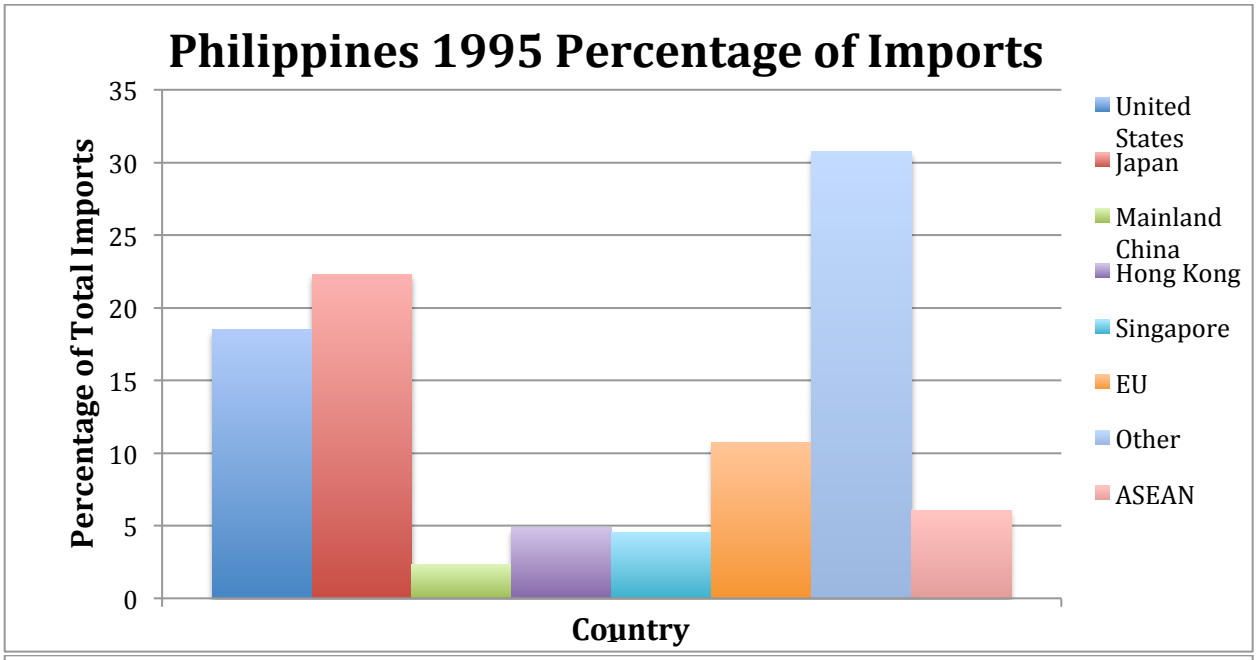


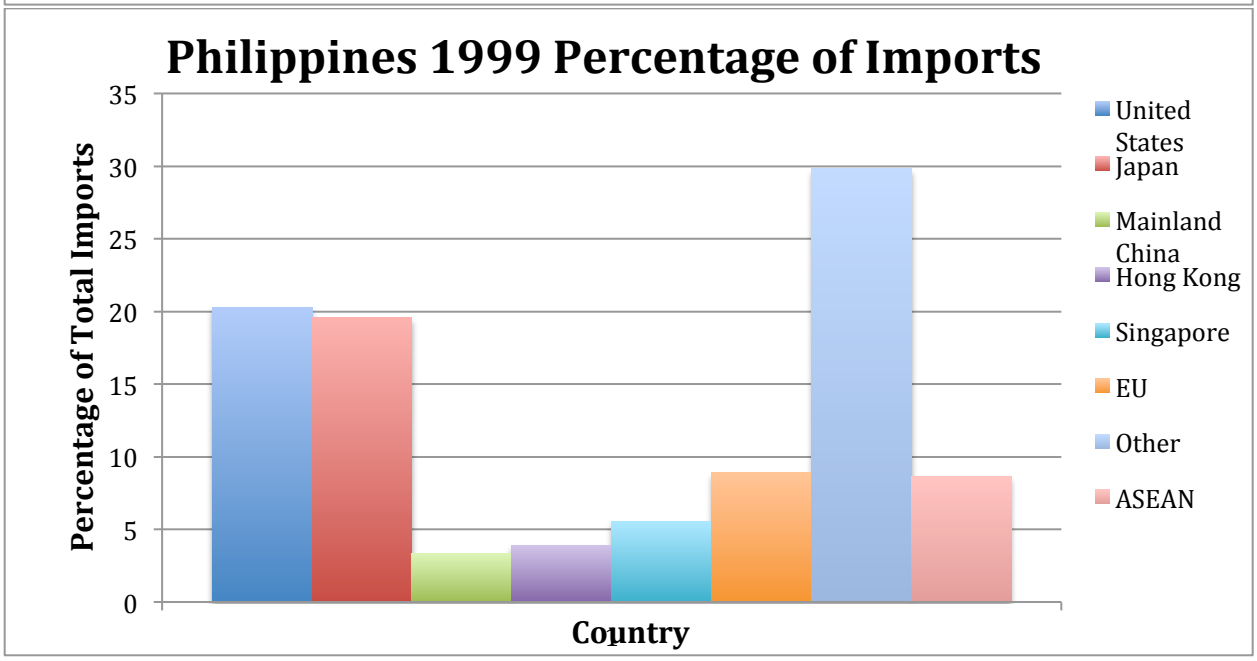
E.2 Philippines' main trading partners via imports

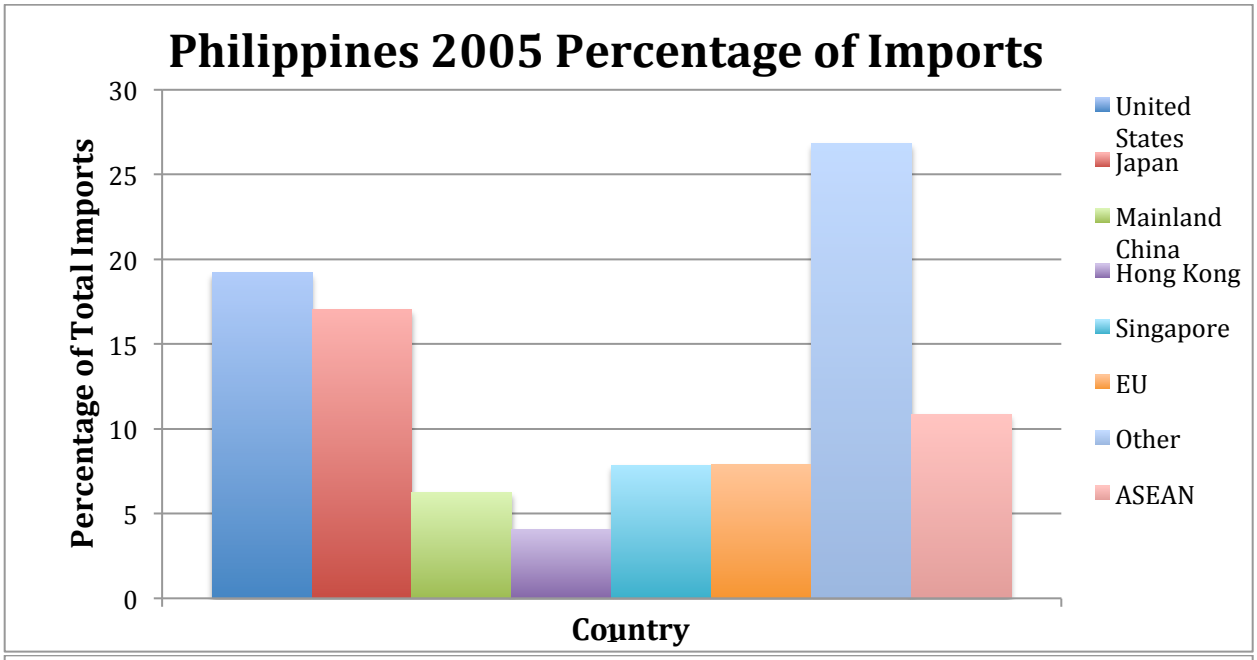


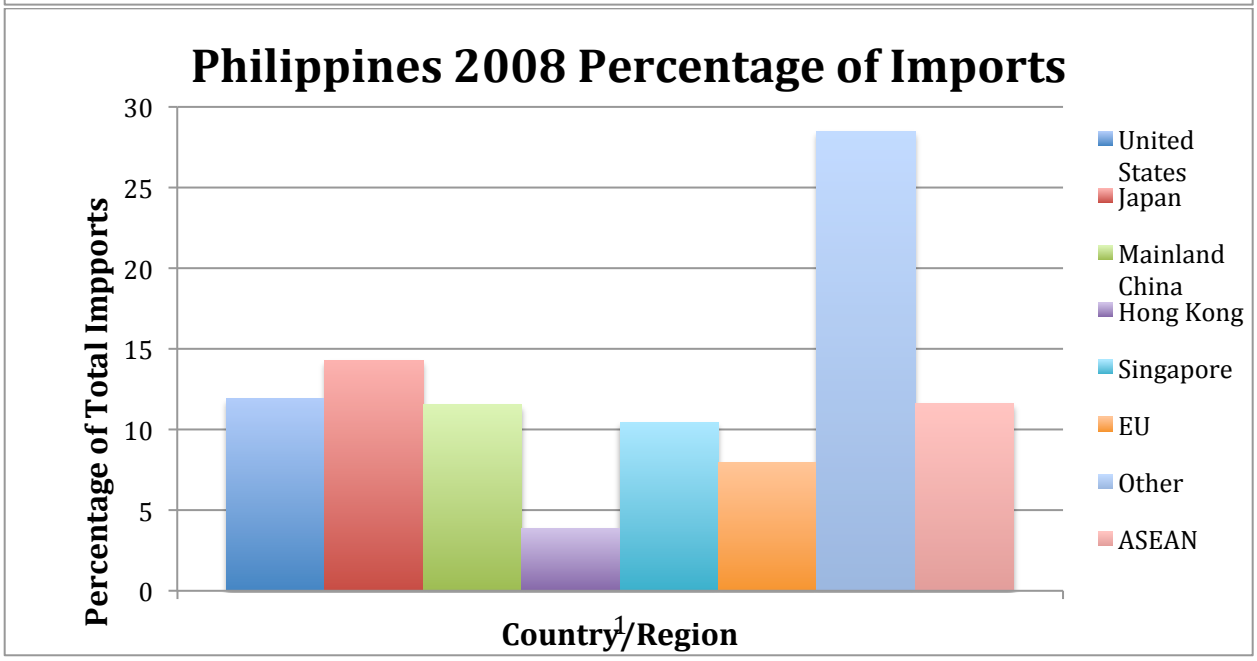

Philippines 1985 Percentage of Imports
Percentage of Total Imports
30
25
20
15
10
5
0
1
Country/Region
US
Japan
Mainland China
Hong Kong
Singapore
EEC
Others
ASEAN


Philippines 1990 Percentage of Imports
Percentage of Total Imports
30
25
20
15
10
5
0
1
Country
United States
Japan
Mainland China
Hong Kong
Singapore
EU
Other
ASEAN


Philippines 1995 Percentage of Imports
Percentage of Total Imports
35
30
25
20
15
10
5
0
Country
United States
Japan
Mainland China
Hong Kong
Singapore
EU
Other
ASEAN

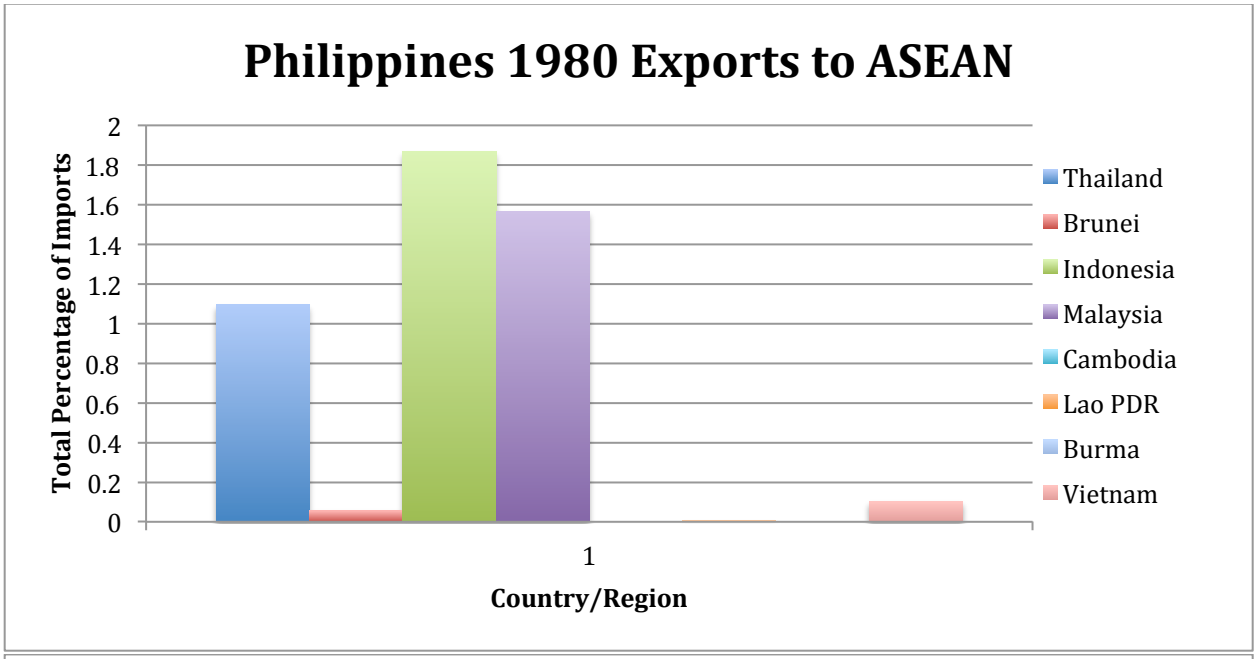

Philippines 1999 Percentage of Imports
Percentage of Total Imports
35
30
25
20
15
10
5
0
Country
United States
Japan
Mainland China
Hong Kong
Singapore
EU
Other
ASEAN

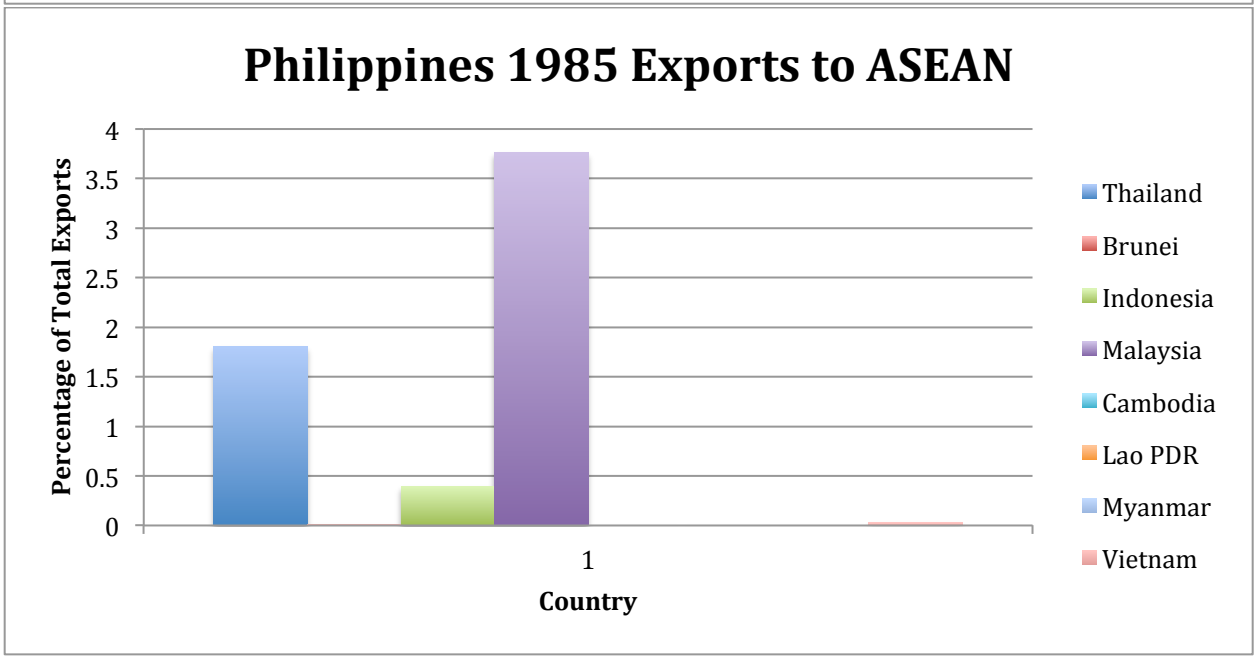

Philippines 2005 Percentage of Imports
Percentage of Total Imports
30
25
20
15
10
5
0
Country
United States
Japan
Mainland China
Hong Kong
Singapore
EU
Other
ASEAN

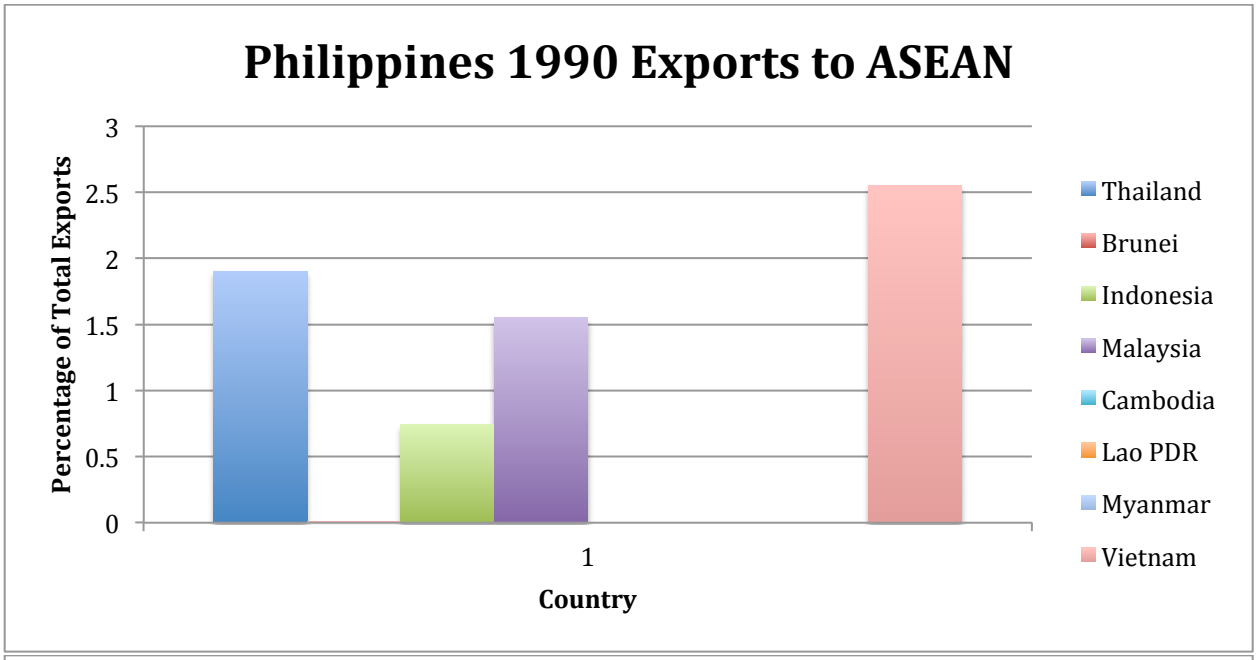

Philippines 2008 Percentage of Imports
Percentage of Total Imports
30
25
20
15
10
5
0
Country/Region
United States
Japan
Mainland China
Hong Kong
Singapore
EU
Other
ASEAN

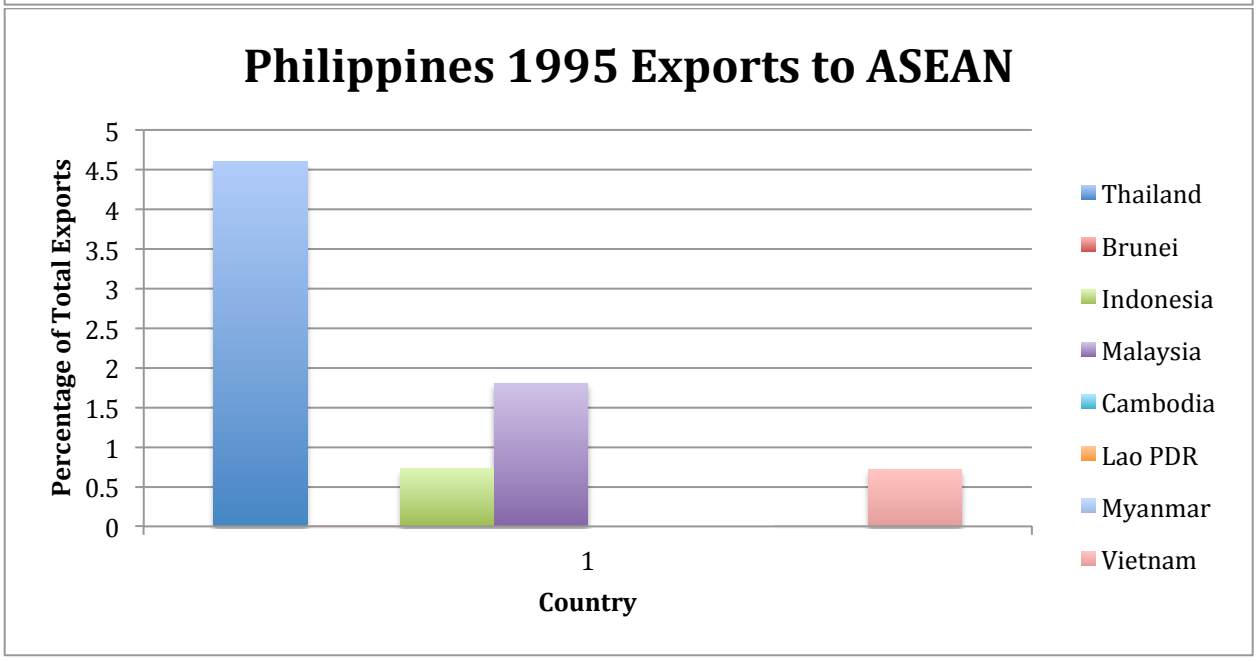
Appendix F Philippines Trade within ASEAN

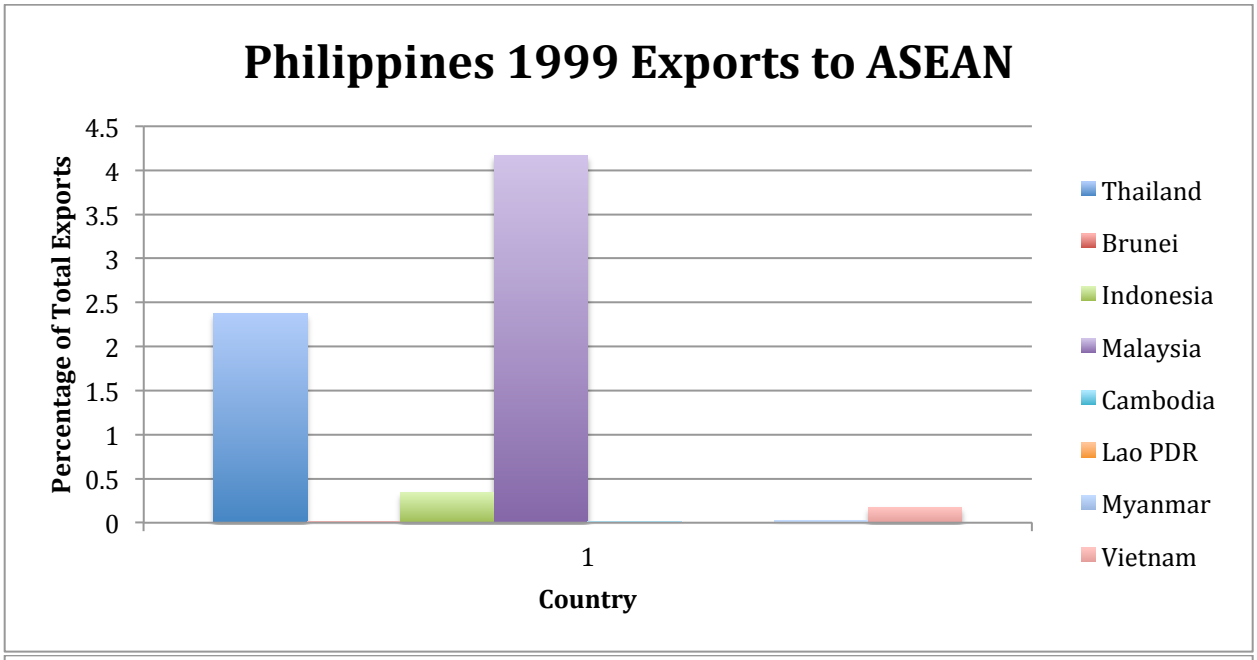
F.1 Philippines main trade in ASEAN via exports

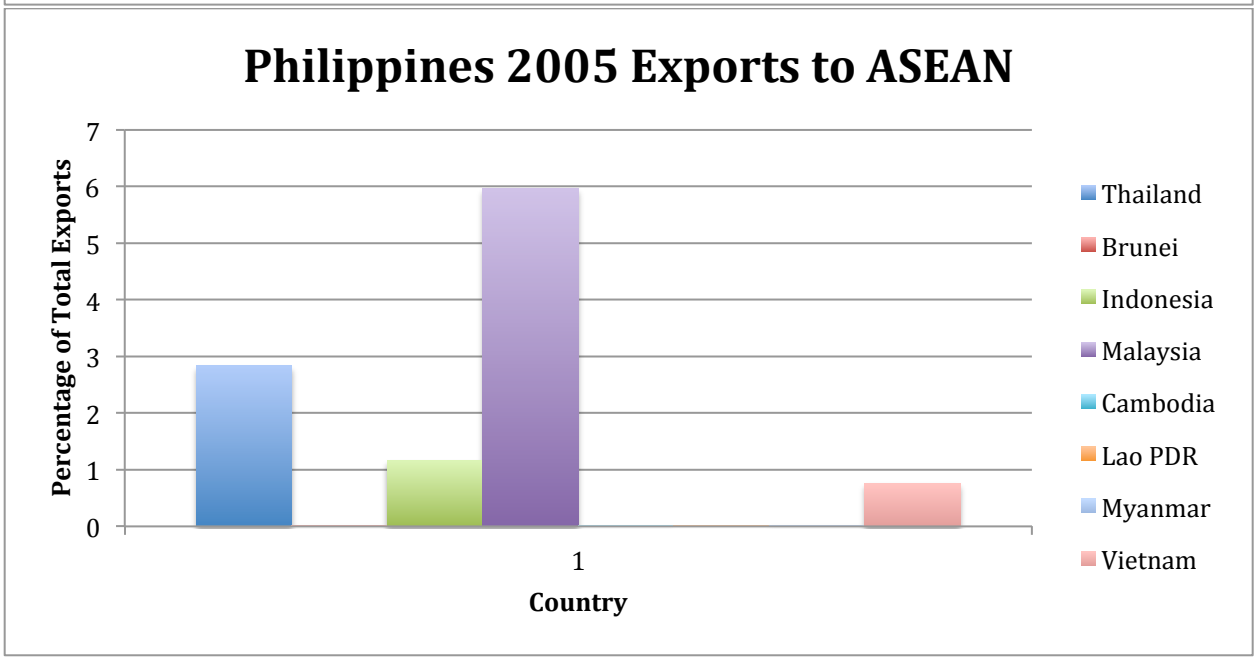


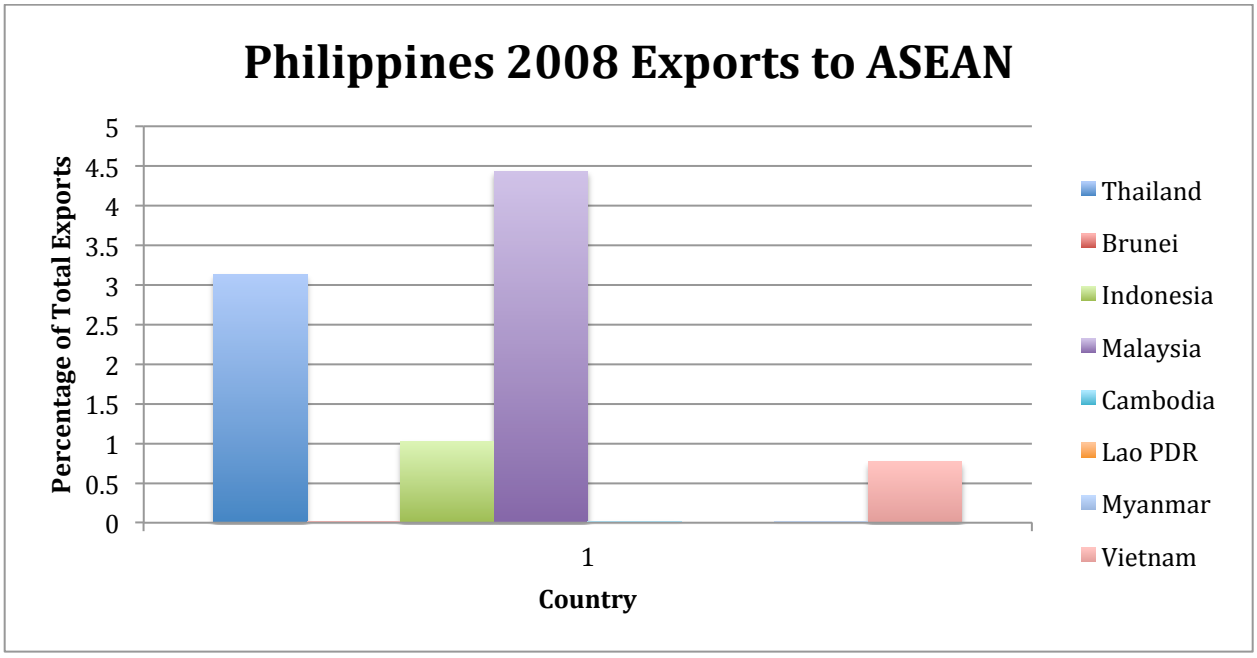



Philippines 1990 Exports to ASEAN
Percentage of Total Exports
3
2.5
2
1.5
1
0.5
0
1
Country
Thailand
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

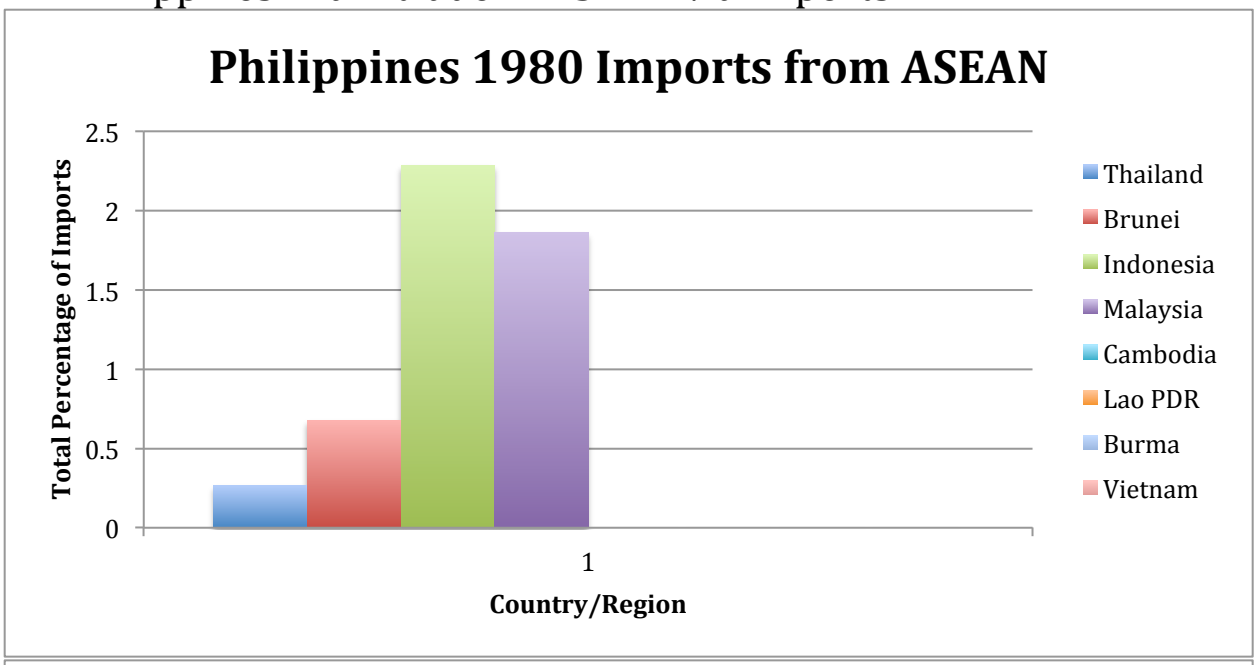

Philippines 1995 Exports to ASEAN
Percentage of Total Exports
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1
Country
Thailand
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

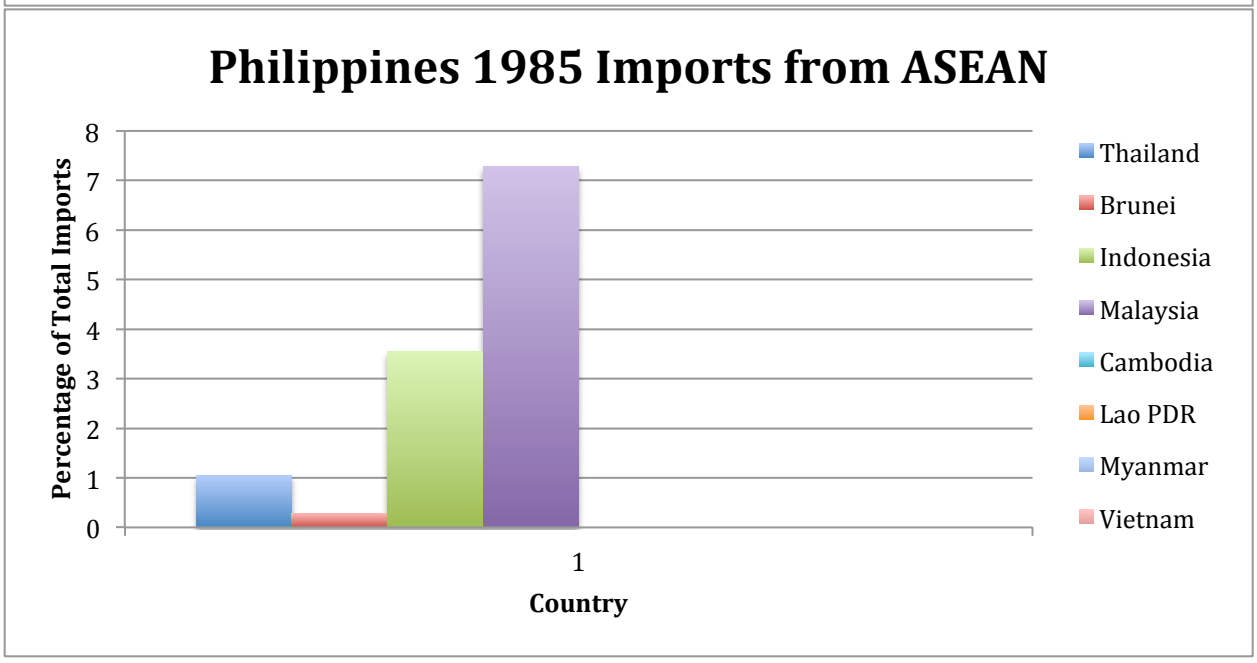

Philippines 1999 Exports to ASEAN
Percentage of Total Exports
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1
Country
Thailand
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

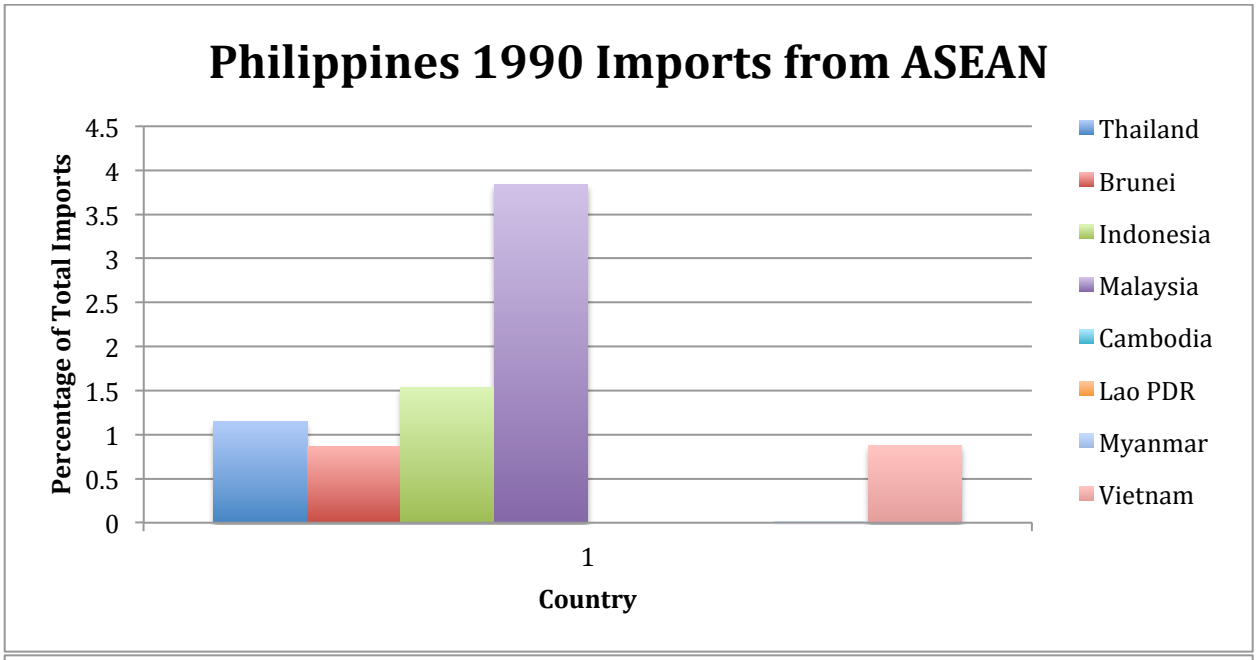

Philippines 2005 Exports to ASEAN
Percentage of Total Exports
7
6
5
4
3
2
1
0
1
Country
Thailand
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

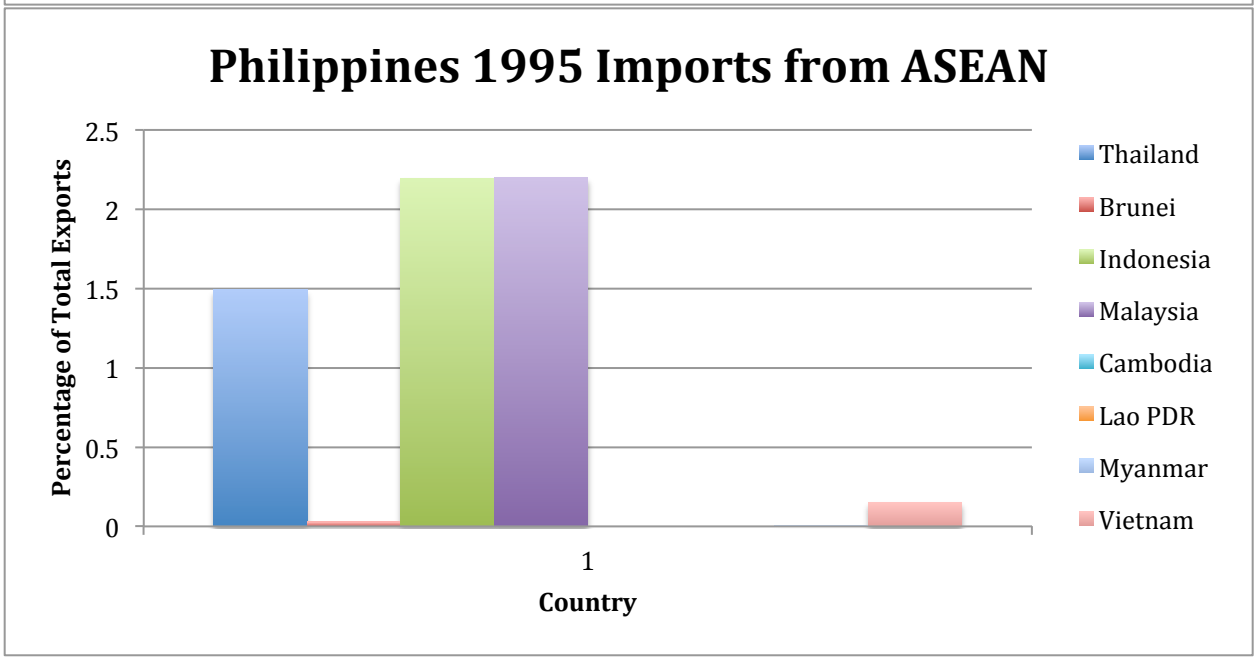

Philippines 2008 Exports to ASEAN
Percentage of Total Exports
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1
Country
Thailand
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam

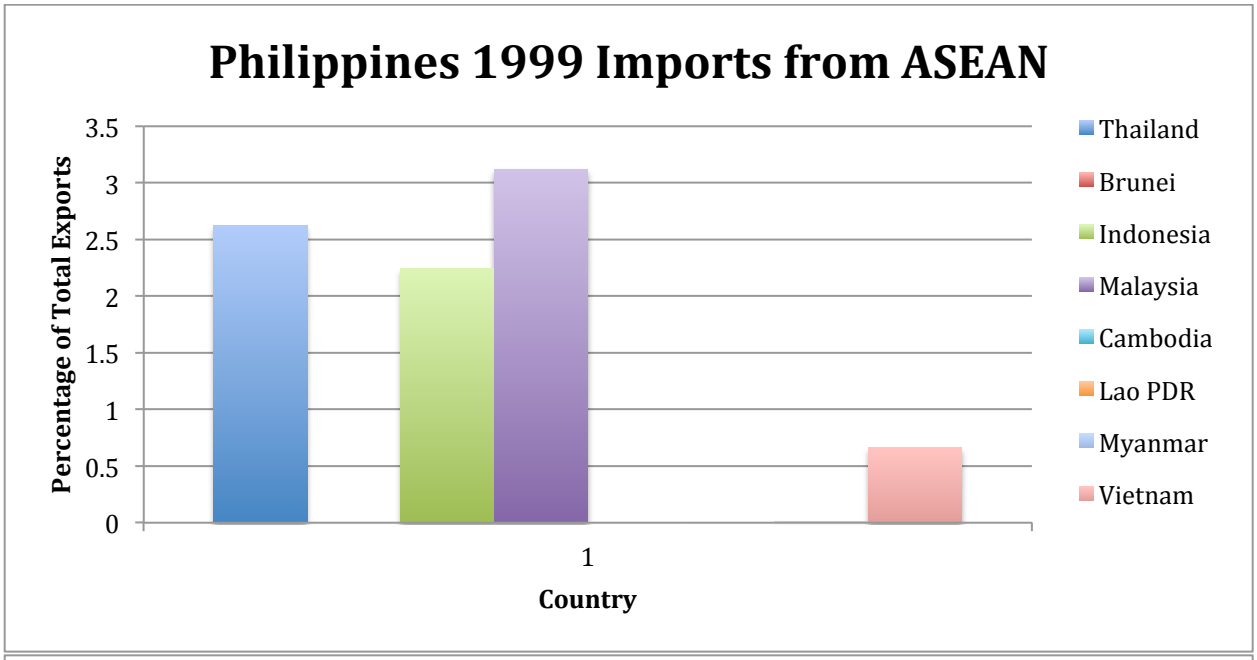
F.2 Philippines' main trade in ASEAN via imports

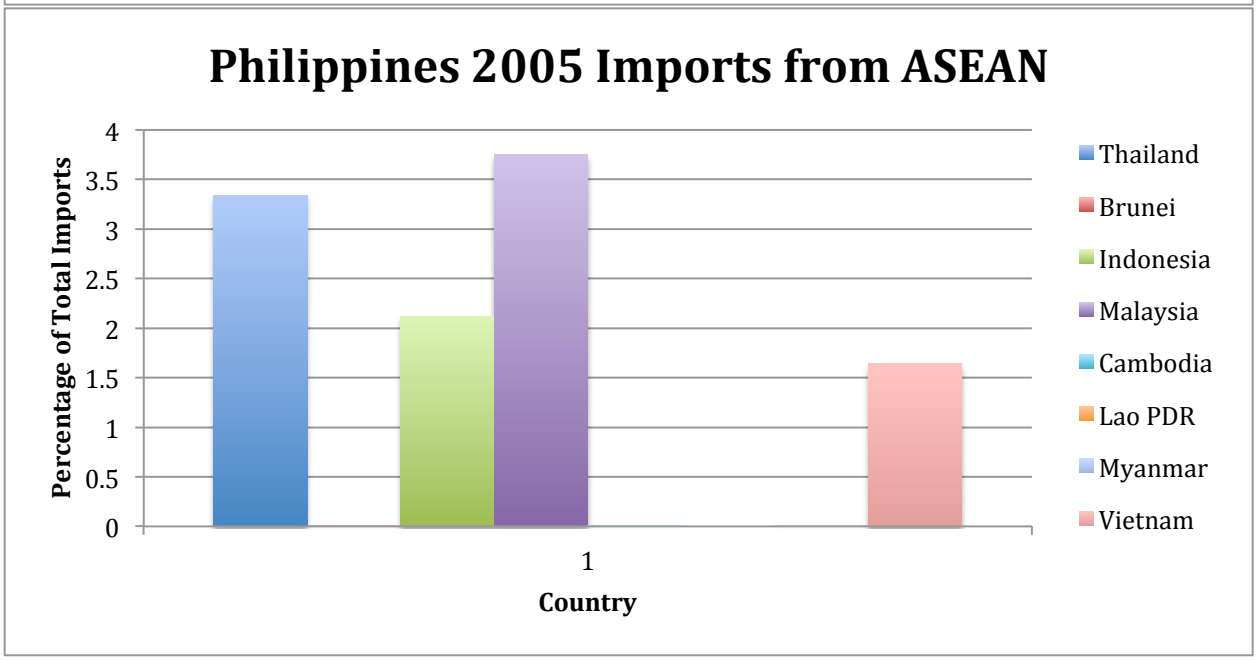


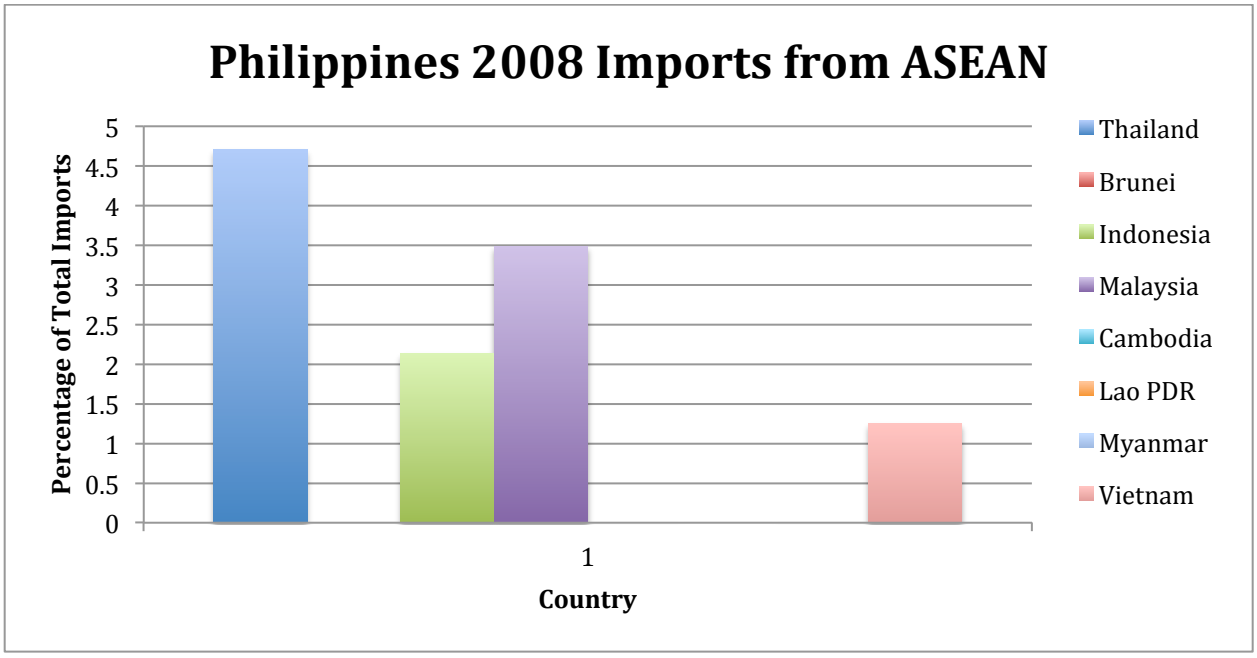



Philippines 1990 Imports from ASEAN
Percentage of Total Imports
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1
Country
Thailand
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam


Philippines 1995 Imports from ASEAN
Percentage of Total Exports
2.5
2
1.5
1
0.5
0
1
Country
Thailand
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam


Philippines 1999 Imports from ASEAN
Percentage of Total Exports
3.5
3
2.5
2
1.5
1
0.5
0
1
Country
Thailand
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam


Philippines 2005 Imports from ASEAN
Percentage of Total Imports
4
3.5
3
2.5
2
1.5
1
0.5
0
1
Country
Thailand
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam


Philippines 2008 Imports from ASEAN
Percentage of Total Imports
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1
Country
Thailand
Brunei
Indonesia
Malaysia
Cambodia
Lao PDR
Myanmar
Vietnam